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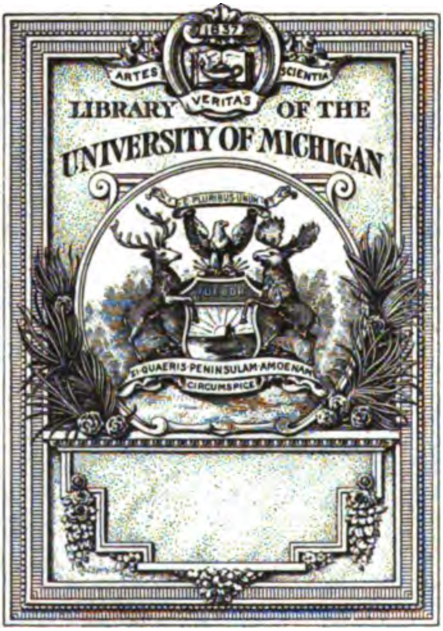
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Vol. LXV.] [Part I.

JOURNAL

OF THE ROYAL STATISTICAL SOCIETY.

MARCH, 1902.

TONNAGE STATISTICS *of the* DECADE 1891-1900.

By SIR JOHN GLOVER.

[Read before the Royal Statistical Society, 21st January, 1902.
The Right Hon. LORD AVEBURY, President, in the Chair.]

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IT is many years since it occurred to me that a useful statistical result might be accomplished if persons in business collected the published figures of their own trades, and brought their knowledge and judgment to bear on their interpretation, seeing that statistics are for the most part collected and published by officials who are necessarily without trade knowledge and experience of the subjects to which they relate.

It also occurred to me that in the time to come there would be historians and statisticians who would keenly explore the facts of the wonderful century from which we so recently parted, and that the *Statistical Journal* ought to be an important book of reference to all such historians and inquirers. I desired at all events that the maritime facts of the last century should be recorded in the *Journals* of the Society. My paper to-night, with the papers I read in 1863, 1872, 1882, and 1892, completes the record up to 1900; and so finishes my self-imposed but most agreeable task. For other trades, and for the time to come, I may be excused for commending the example, as it seems to me that the continuity of statistical record on one subject so secured would enhance the value of our *Journal.* I give this hint to our excellent Secretary. Notwithstanding friendly criticisms, and not at all unaware of its defects, I have purposely kept to the practice adopted in my former papers, by adhering as nearly as possible to a comparison of decades. Taking this method, with whatever disadvantages are inseparable from it, I only add that any other grouping is open to more objections and likely to be less accurate. It is quite true that 1900 is not a good year for comparison so far as the British flag is concerned, owing to so much tonnage being employed by the war, which does not make any mark in our records.

CHARACTER OF THE DECADE.

On the general character of the decade 1891-1900 some particulars must be noted. It could not be regarded as peaceful. The war between Japan and China made considerable demands on our tonnage, and led to great activity in the ports of the Far East in 1894 and 1895. The expedition to the Soudan; the war between Turkey and Greece in 1897; in 1898 the war between the United States and Spain: the further proceedings in the Soudan and the Fashoda incident; and in 1899 the beginning of the war in South Africa,[1] all made great demands on the carrying powers of our flag, which were further increased by the expeditions sent to China in 1900 by ourselves, Germany, France, and the United States.

There were also many other important occurrences during the decade affecting tonnage. The Russian famine in 1891-92 led to the prohibition of the export of grain from Russia in those years, and to the laying-up of a large number of steamers usually engaged in the trade, which had amounted to about 10 million quarters in 1890.

The silver controversy had a very disturbing effect on all Eastern trade. In 1893 financial difficulties, alike on the Continent, in America, and in the Australian Colonies, led to much contraction of business. In 1894 the corn trade was in such a condition that wheat fell during October to the phenomenally low price of 17*s.* 8*d.* per quarter. Sugar was little more than 1*d.* per pound, and American cotton fell to 3*d.* per pound. Quite naturally, great depression in trade and in freights occurred, and continued throughout 1895. The tide turned in 1896. After long stagnation and depression violent fluctuations followed in grain prices. The average price of wheat in 1896 varied to the extent of 11*s.* per quarter, and that of barley to no less than 13*s.* 5*d.*, with immediate effects on freights in all directions. I must not omit to name another circumstance which still more affected grain prices and freights in 1898, viz., what is known as the wheat corner in the United States, for which Mr. Leiter was responsible. This produced the greatest fluctuations which had been known in wheat values for twenty years. The price reached 48*s.* 1*d.* and fell to 25*s.* 5*d.*—a difference of 22*s.* 8*d.* per quarter between highest and lowest. Besides American speculation, the suspension of the French import duty played an important part in these fluctuations.

---

[1] The tonnage of British vessels employed by Government in connection with the war that entered and cleared at ports in the United Kingdom was 383,931 tons in 1899; and 1,571,969 tons in 1900.

Strikes also caused great disturbance in the freight markets. Strikes of dockers; strikes of colliers in South Yorkshire, in Wales, in Scotland, and in the North of England; strikes of engineers (one lasting for thirty weeks), all contributed to the difficulties through which shipping business had to be carried on. It was generally understood that the Welsh strike in 1898 led to the abandonment of the naval manœuvres for that year. I should also name that the famines in India were another disturbing factor, greatly lessening the quantity of produce which, but for them, would have come from India to Europe.

LEGISLATION DURING THE DECADE.

As regards legislation during the decade, I am pleased to say there was not much. A wiser spirit came over the officials of the Board of Trade. They did not encourage State attempts to show how a trade so hazardous as that of shipping should be carried on. Neither Mr. Bryce nor Mr. Ritchie nor Mr. Balfour interfered much, and the result is, far better relations between the department and the shipowners; and not infrequently some friendly cooperation to effect improvements. At the same time, plenty of legislative projects found their way into the Houses of Parliament. I understand that during the years 1891 to 1900 inclusive, no fewer than 91 Bills affecting shipping were introduced. Happily most of them were still-born. The winnowing quality of Parliament was so effectual that only 13 of this number became Acts; these, however, included two important measures of consolidation, making the law to which they relate more accessible and comprehensible.

The efforts of shipowners to get the cost of lighting our coasts put on the Consolidated Fund failed; but they led to the compromise enacted by the Mercantile Marine Fund Bill of 1898, which in the meanwhile somewhat lessened the burden and improved the basis of charge. I must add, however, that this Bill does not seem likely to end the controversies that have occurred on this subject. They have confirmed the shipowners' opinions to the effect that the present system of lighting our coasts through three separate Boards, from which those who pay the dues are practically excluded, is extravagant, and that the lights, without which the King's ships could not be safely navigated, nor our shores be safely approachable, ought to be regarded here, as elsewhere, a national duty, which should be paid for out of the National Exchequer. The attempt to get the law of insurance consolidated has not yet succeeded, but the effort is likely to be renewed, and I hope will be successful. By far the most important measure of the decade was the Merchant Shipping Act, 1894, which consolidated into one Act no less than forty-eight previous statutes. It is said to be the longest Act on the Statute Book, and consists of 748 sections and 22 schedules.

There were several important inquiries which concerned shipping—The Royal Commission on Labour, 1892, the Mercantile Marine Fund and Light Dues, 1894, the Manning Committee in the same year. Rules of the Road and Sounding Signals, Screening of Side-lights, Lights and Signals for Fishing Vessels, Winter Atlantic Freeboard, and the Royal Commission on the Port of London.

TRADE DURING THE DECADE.

It is the prevailing fashion to speak of the trade of the United Kingdom as failing. It is quite true that comparing its percentages of increase with the percentages of other States on much smaller figures, the explanation of such observations may be found. But, comparing the trade of the United Kingdom with itself at different dates, the inference is altogether groundless and only proves the need for care in drawing conclusions from statistics. The value of our imports and exports was:—

	£		£
1860	375 millions	1890	749 millions
'70	547 "		
'80	697 "	1900	877 "

The quantities of certain leading articles of export and import are shown in—

TABLE I.—*Showing the Quantities of certain Articles Exported and Imported in* 1860, 1870, 1880, 1890, *and* 1900.

[000's omitted.]

	1860.	1870.	1880.	1890.	1900.
Exports.					
Coal .... tons	7,321,	11,702,	18,729,	28,738,	44,089,
Iron and steel.... ,,	1,442,	2,825,	3,792,	4,001,	3,540,
Salt .... ,,	696,	764,	1,051,	726,	547,
Imports.					
Corn .... cwts.	52,000,	74,103,	134,172,	155,620,	189,636,
Rice..................... ,,	1,535,	4,077,	7,889,	5,957,	6,291,
Wool .... lbs.	148,000,	263,250,	463,508,	633,028,	583,739,
Wood ....loads	2,727,	4,460,	6,430,	7,212,	9,899,
Sugar .... cwts.	8,817,	15,304,	20,654,	26,994,	35,673,
Pyrites .... tons	93,	411,	658,	656,	741,
Guano .... ,,	141,	280,	80,	27,	33,
Petroleum .... gals.	—	6,859,	38,793,	105,080,	254,978,
Oil seed cake .... tons	—	158,	241,	282,	394,

These articles, from their great bulk, chiefly affect shipping and freight markets.

It will be observed that the increased export of coal is nearly equal to the whole coal export of 1880. Iron and steel are rather less in 1900 than in 1890, but the simple explanation is, that our domestic need was too great to admit of more; we were indeed obliged to import a considerable quantity of manufactured iron and steel both from America and the Continent.

A further decline in the export of salt is mainly explained by the proceedings of the Salt Union. The export was in 1880 over 1 million tons, in 1890, 726,000 tons, and in 1900 only 547,000 tons. It is not surprising that the high prices attempted by the Salt Union sent the buyers elsewhere, and that the Union is now endeavouring to write off a large portion of its capital as lost.

The corn import shows a very large increase; sugar the same; and the petroleum import far more than doubled. The decrease in the import of wool must, I fear, be attributed mainly to the shipment direct to Continental ports of large quantities which used to come to London for re-distribution, but which find the near Continental ports cheaper for that purpose. To some extent it may be the result of duties favouring direct shipments. The import of wood, a little under 7¼ millions of loads in 1890, grew to nearly 10 millions of loads in 1900, representing a very large increase in the demand for tonnage. It is not easy to estimate the total weight of cargo represented by these imports and exports, but for many years my able friend, Mr. John Williamson, of Liverpool, has made this estimate for the Chamber of Shipping, and he has been kind enough, for the purpose of this paper, to furnish me with his estimate for 1900, for which I take this opportunity of sincerely thanking him. His figures are:—

Estimated Total Weight of Imports and Exports.

For 1880	53 million tons
,, '90	76½ ,,
,, 1900	102½ ,,

1890 showed an increase of 44 per cent. over 1880, and the figures for 1900 represent a further increase of 34 per cent.; in short, the weight has nearly doubled since 1880. It is not surprising that other States should be made envious by such vast maritime development, and that some Governments should generously help their subjects—by bounties on construction, by mileage subsidies, by tariff advantages, by preference rates on Government railways, and even by paying the Suez Canal dues on their shipping—to get some share of this ocean carrying, and, perhaps (or perhaps not), get it more quickly by these fictitious aids. Even a statistician may be surprised at the figures, though not at the world-wide envy they have excited. But it is not so easy to understand the prevalence of pessimistic views in spite of such easily accessible figures which he who runs, or even writes leading articles, might read. And I add that this observation might be made even if this were all the work done by our mercantile fleet; but, as I have repeatedly shown, and in a later part of this paper shall show again, these figures do not include our extensive carrying for other nations.

SOURCES OF GRAIN SUPPLIES.

One of the most frequent causes of disturbance in the freight markets is fluctuations in the sources of grain supplies: I show these in Table II (p. 8).

In this table I direct attention especially to the changes which have taken place during the decade in the sources whence our supplies of wheat came. The carriage of grain affords so much employment for shipping, that these variations are most important in their influence on the freight markets apart from their importance as a question of food.

The first observation I make on this table is that during the whole decade we required 44 million tons of wheat, wheat meal, and flour. The lowest annual import was a little over 4 million tons in 1897, when the English average price of wheat, as published in the "London Gazette," was 30*s.* 2*d.* per imperial quarter; and the highest was 5 million tons in 1895, when the average price was 23*s.* 1*d.* per imperial quarter. The changes in the sources whence this enormous supply came from are remarkable. Less came from the Pacific States than in the previous decade—only 12·32 per cent. against 19·32 per cent. of the total import. Less came from India—only 7·50 per cent. against 12·85 per cent. Less, also, from Australia—only 2·50 per cent. against 3·98 per cent. On the other hand, the United States and Canada increased from 35·80 per cent. to 49·48 per cent. The Russian supply was 16·09 per cent. for 1881-90, and 12·97 per cent. for 1891-1900. It may be said that the United States, Canada, South America and the Black Sea ports sent 84·77 per cent. of the wheat import, and as these countries have few vessels suitable for oversea grain carrying, the bulk of this carriage was done by our Flag.

TABLE II.—*Showing the Total Quantity of Wheat, Wheat Meal, and Flour Imported*
Percentage Variation in

	United States (Atlantic Ports) and Canada.	Percentage of Total for the Year.	Russia (Southern Ports), Bulgaria, Roumania, and Turkey.	Percentage of Total for the Year.	United States (Pacific Ports) and Chile.	Percentage of Total for the Year.	Argentine Republic and Uruguay.	Percentage of Total for the Year.	British East Indies.	Percentage of Total for the Year.
	Tons.		Tons.		Tons.		Tons.		Tons.	
1891	1,770,150	42·63	786,384	18·94	442,674	10·66	124,547	3·00	650,237	15·66
'92	2,586,274	59·47	281,890	6·48	458,281	10·53	175,942	4·04	624,722	14·36
'93	2,105,653	49·04	510,608	11·90	748,191	17·43	394,429	9·19	309,804	7·21
'94	1,758,803	39·41	860,404	19·28	559,800	12·55	679,415	15·22	267,452	5·99
'95	1,548,618	30·94	1,272,422	25·42	723,580	14·46	605,783	12·10	440,147	8·79
'96	2,073,081	45·39	1,203,542	26·35	631,200	13·82	249,540	5·46	105,647	2·31
'97	2,248,428	55·23	737,539	18·12	553,405	13·60	50,170	1·23	28,638	0·70
'98	2,711,096	62·87	181,866	4·22	443,980	10·29	206,890	4·80	476,895	11·06
'99	2,701,473	60·31	118,400	2·53	352,995	7·89	579,006	12·93	409,610	9·14
1900	2,368,329	52·50	196,770	4·36	532,050	11·79	937,880	20·80	305	0·01
Total	21,871,905	—	6,144,820	—	5,446,156	—	4,003,602	—	3,318,457	—
Percentage of total for the ten years...	49·48		13·91		12·32		9·06		7·50	
Percentage of total for the decade 1881-90 ...	35·60		—		19·32		—		12·85	

* In the above table Canada is grouped with United States (Atlantic Ports), North Russia with
separately, for Canada, Germany,

	1891.	1892.	1893.	1894.	1895.	1896.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Canada	210,154	261,705	211,915	201,196	209,395	277,466
Germany	53,946	38,484	23,912	45,679	49,848	61,885
North and south Russia	731,471	218,219	503,157	840,464	1,152,593	862,834

ENTRIES AND CLEARANCES.

I now come to the tonnage tables. I desire first to express my great obligation to Sir Alfred E. Bateman and Mr. Walter J. Howell for their help in the preparation of some of these tables. And I cannot speak too highly of the care which is shown in the compilation of all the statistical tables regarding shipping published by the Board of Trade.

*into the United Kingdom during each Year of the last Decade, whence it came, and the the Source of Supply.**

Russia (Northern Ports) and Germany.	Per-centage of Total for the Year.	Australasia.	Per-centage of Total for the Year.	Austrian Territories.	Per-centage of Total for the Year.	France.	Per-centage of Total for the Year.	Other Countries.	Per-centage of Total for the Year.	Total.
Tons.		Tons.		Tons.		Tons.		Tons.		Tons.
135,680	3·26	112,203	2·70	60,896	1·46	8,505	0·24	60,518	1·45	4,151,793
39,426	0·91	102,947	2·36	48,863	1·12	8,335	0·07	28,705	0·66	4,350,385
26,107	0·61	130,982	3·05	54,930	1·28	2,600	0·06	10,063	0·23	4,293,502
48,752	1·09	196,928	4·41	55,348	1·24	24,239	0·55	11,895	0·26	4,463,086
96,610	1·93	177,986	3·55	65,288	1·30	56,444	1·13	19,037	0·38	5,005,915
141,157	3·09	325	0·01	69,415	1·52	86,100	1·89	7,301	0·16	4,567,808
299,548	7·36	—	—	57,197	1·41	84,277	2·07	11,839	0·28	4,071,041
204,088	4·73	11,051	0·26	36,464	0·85	24,982	0·58	14,993	0·34	4,312,260
41,992	0·93	186,330	4·16	51,480	1·15	32,092	0·72	10,709	0·24	4,479,087
170,443	3·78	199,116	4·42	58,397	1·29	37,883	0·84	9,705	0·21	4,510,878
1,203,748	—	1,117,867	—	558,328	—	360,547	—	184,765	—	44,205,195
2·73		2·50		1·26		0·82		0·42		
—		3·98		2·27		—		—		—

Germany, and South Russia with the other Black Sea ports. The following are the figures, and North and South Russia:—

1897.	1898.	1899.	1900.	Total.	Percentage of Total for the Ten Years.
Tons. 317,559	Tons. 349,011	Tons. 387,771	Tons. 376,641	Tons. 2,802,813	6·34
70,357	40,936	26,336	93,222	504,600	1·14
755,281	317,784	126,085	224,931	5,732,819	12·97

TABLE III.—*Showing the Total Tonnage, Steam and Sailing, Entered and Cleared, with Cargoes and in Ballast, at Ports in the United Kingdom from and to Foreign Countries and British Possessions, and Coastwise, for the Years* 1850, 1860, 1870, 1880, 1890, *and* 1900.

[000's omitted.]

Year.	Tons.	Increase.	Increase per Cent.
1850....................	39,634,	—	—
'60....................	58,707,	19,072,	48·12
'70....................	73,198,	14,491,	24·68
'80....................	133,250,	60,052,	82·04
'90....................	164,340,	31,089,	23·33
1900....................	208,777,*	44,437,	27·04

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* These figures are exclusive of the tonnage of British vessels employed by Government in connection with the South African War. The entrances and clearances of vessels so employed with cargoes and in ballast in 1900 amounted to 1,571,969 tons.

With one exception only, 1900 shows the largest increase of any of the five decades with which I have dealt. The exception was an increase of 60 millions in 1880 over 73 millions in 1870. The increase of 44 millions in 1900 over 164 millions in 1890 is satisfactory. The increase per cent., 27·04, is higher than the rate of increase in the previous decade, notwithstanding the area on which it is taken is 164 millions instead of 133 millions. As the entries and clearances in 1850 were under 40 millions and over 208 millions in 1900, the increase for the half century may be taken as five-fold.

TABLE IV.—*Showing the Tonnage, Steam and Sailing, Entered and Cleared Coastwise, with Cargoes and in Ballast, at Ports in the United Kingdom, for the Years* 1850, 1860, 1870, 1880, 1890, *and* 1900.

[000's omitted.]

Year.	Tons.	Increase.	Increase per Cent.
1850	25,129,	—	—
'60	34,017,	8,888,	35·37
'70	36,558,	2,540,	7·47
'80	74,514,	37,956,	106·55
'90	90,056,	15,542,	20·86
1900	110,254,	20,198,	22·43

TABLE V.—*Showing the Tonnage, Steam and Sailing, Entered and Cleared at Ports in the United Kingdom, with Cargoes and in Ballast, in the Foreign Trade only, for the Years* 1850, 1860, 1870, 1880, 1890, *and* 1900.

[000's omitted.]

Year.	Tons.	Increase.	Increase per Cent.
1850	14,505,	—	—
'60	24,689,	10,184,	70·21
'70	36,640,	11,950,	48·40
'80	58,736,	22,095,	60·30
'90	74,283,	15,547,	26·47
1900	98,523,*	24,240,	32·63

* See note to Table III.

In Tables IV and V the figures for the coasting and foreign trade are shown separately. The increased percentage coastwise, 22·43, is the largest save two in the half century. That in the foreign trade, 32·63, though by no means the highest percentage, marks the largest absolute increase: it is nearly seven-fold for the 50 years.

The vessels that entered and cleared with cargoes only are shown in:—

TABLE VI.—*Showing the Tonnage, Steam and Sailing, Entered and Cleared at Ports in the United Kingdom, in the Foreign Trade, with Cargoes only, for the Years* 1850, 1860, 1870, 1880, 1890, *and* 1900.

[000's omitted.]

Year.	Tons.	Increase.	Increase per Cent.
1850	12,020,	—	—
'60	20,837,	8,817,	73·35
'70	31,624,	10,786,	51·76
'80	49,678,	18,054,	57·08
'90	62,836,	13,157,	26·48
1900	79,858,*	17,022,	27,09

* See note to Table III.

Table V includes the tonnage of many vessels which entered or left our ports for foreign countries without cargoes; that figure was 98½ million tons; excluding all ballast entries and clearances, the figure is reduced to nearly 80 million tons, and compares with nearly 63 millions in 1890, starting with only 12 millions in 1850. The tonnage increase is exceeded in only one decade, and as the growth is continuous since 1850, it must be regarded as satisfactory so far as the foreign trade is concerned.

The proportion thereof done by the British flag and by foreign flags comes under our notice in Tables VII and VIII.

TABLE VII.—*Showing the Amount of British Tonnage, Steam and Sailing, Entered and Cleared at Ports in the United Kingdom with Cargoes only, and with Cargoes and in Ballast, from and to Foreign Countries and British Possessions for the Years* 1850, 1860, 1870, 1880, 1890, *and* 1900.

[000's omitted.]

Year.	With Cargoes only.			With Cargoes and in Ballast.		
	Tons.	Increase.	Increase per Cent.	Tons.	Increase.	Increase per Cent.
1850	8,039,	—	—	9,442,	—	—
'60	12,119,	4,080,	50·75	13,914,	4,472,	47·36
'70	22,243,	10,123,	83·52	25,072,	11,157,	80·18
'80	35,885,	13,642,	61·37	41,348,	16,276,	64·91
'90	46,406,	10,520,	29·32	53,973,	12,624,	30·53
1900	52,332,*	5,926,	12·77	62,710,*	8,737,	16·19

* See note to Table III.

TABLE VIII.—*Showing the Amount of Foreign Tonnage, Steam and Sailing, Entered and Cleared at Ports in the United Kingdom with Cargoes only, and with Cargoes and in Ballast, from and to Foreign Countries and British Possessions for the Years* 1850, 1860, 1870, 1880, 1890, *and* 1900.

[000's omitted.]

Year.	With Cargoes only.			With Cargoes and Ballast.			Proportion of Total Foreign Entries and Clearances to	
	Tons.	Increase.	Increase per Cent.	Tons.	Increase	Increase per Cent.	Total Entries and Clearances.	British Entries and Clearances.
							Per cnt.	Per cnt.
1850....	3,981,	—	—	5,062,	—	—	34·89	53·61
'60....	8,718,	4,737,	118·00	10,774,	5,711,	112·00	43·63	79·58
'70....	9,381,	663,	7·00	11,568,	798,	7·00	31·57	46·13
'80....	13,793,	4,412,	47·00	17,387,	5,819,	53·00	29·61	42·05
'90....	16,429,	2,636,	19·12	20,310,	2,923,	16·81	27·34	37·63
1900....	27,525,	11,096,	67·54	35,812,	15,502,	76·33	86·35	57·11

The total amount of British tonnage entered and cleared with cargoes at ports in the United Kingdom to and from foreign countries was the subject of special comment in my last paper. 8 million tons in 1850 became 12 millions in 1860; 22 millions in 1870; nearly 36 millions in 1880; and 46 millions in 1890. It then seemed that some slackening in the pace might have occurred, but the figure for 1900 is over 52 millions.

The total amount of foreign tonnage is even more remarkable. Under 4 millions in 1850, it became nearly 8¾ millions in 1860; over 9¼ millions in 1870; 13¾ millions in 1880; nearly 16½ millions in 1890; and attained the remarkable figure of 27½ millions in 1900.

While it may be interesting to record the percentages in comparing these increases, they are only misleading if taken without qualification. Thus the British increase of 10 millions in 1870 makes 83½ per cent., and a very similar increase in 1890 yielded only 29·32 per cent. So in the percentages of foreign increases. An increase of nearly 4½ million tons in 1880 yielded 47 per cent., while a similar increase in 1860 yielded 118 per cent. A more detailed examination shows that the main increase of foreign entries and clearances is chiefly at certain coal ports, coal cargoes and moderately cheap bunker coal being the essential conditions on which these boats can trade in our ports at all. It must again be borne in mind that the work done by the British flag which figures in this comparison is by no means the whole of our cargo-carrying, as will appear when I come to speak later on in this paper of the work done by us for other nations.

Meanwhile, in Tables VII and VIII it is very interesting to observe that immense as has been the growth of foreign tonnage with cargoes in our ports, as shown in Table VIII, the corresponding growth under our own flag has been such that the proportion of 34·89 foreign to total entries and clearances which measured the fact in 1850, is only 36·35 in 1900. The total tonnage in the foreign trade in 1850 was only 14½ millions; by 1900 it grew to 98½ millions, but notwithstanding this enormous increase, the foreign proportion was only 1½ per cent. more. The vitality of our flag could hardly have a stronger proof. It is further interesting to note how soon the artificial stimulus of the repeal of the navigation laws was exhausted. The foreign proportion in 1850 jumped from 34·89 to 43·63 in 1860, but immediately afterwards it declined; in 1870 it was only 31·57; in 1880 still less, 29·61; and in 1890, 27·34. There had been lessened proportions of foreign tonnage in every decade until the last, when it increased to 36·35, a trifle higher than it was in 1850.

I need not add in passing, that whatever the bounties paid by foreign nations to their flags may have had to do with the production of this result, we enjoyed no help of that sort from our Government. The chief factors in the case of our own flag were improvements in the size, speed, and efficiency of our cargo steamships. British shipowners were free sellers of old and small steamers and sailing vessels to foreigners, who have fewer State obstacles put in the way of their use than we have. Foreigners have to a very large extent bought our wooden fleet, and the production here of such vessels has practically ceased. They have also bought large numbers of iron and steel steamers from us, and have thus been greatly helped by our own tools in their competition with us.

The proportion of foreign tonnage in our trade fluctuates between the different flags. This is shown in:—

TABLE IX.—*Showing the Tonnage of Steam and Sailing Vessels with Cargoes only, and their Nationalities, Entered and Cleared at Ports in the United Kingdom, from and to Foreign Countries and British Possessions, in the Years* 1850, 1860, 1870, 1880, 1890, *and* 1900.

Nationality.	1850.	1860.	1870.	1880.	1890.	1900.
British	8,039,308	12,119,454	22,243,039	35,885,868	46,406,250	*52,332,155
Norwegian	331,664	948,212	1,975,575	2,914,407	3,792,739	5,700,197
German................	—	1,797,747	1,438,595	2,576,819	3,354,754	4,361,507
Swedish	125,649	366,700	591,985	1,310,707	1,448,559	2,988,239
Dutch	240,444	445,556	436,214	1,049,377	1,768,904	2,754,228
Danish	285,263	618,681	623,798	1,158,572	1,485,616	2,454,537
Spanish................	46,328	128,181	293,800	584,721	1,154,290	2,236,992
French	369,624	616,410	785,658	1,133,630	1,271,181	2,027,654
Belgian	71,775	112,537	305,384	461,078	696,121	1,294,410
Italian	—	275,688	811,903	884,206	364,321	1,041,354
Russian...	163,254	242,673	538,443	470,336	456,621	992,022
American	1,215,225	2,734,381	1,134,215	882,277	272,735	548,186
Austrian	—	316,511	356,701	260,923	100,914	331,364
Other countries	1,132,140	115,187	94,370	106,029	263,070	795,299
Total foreign	3,981,366	8,718,464	9,381,641	13,793,082	16,429,825	27,525,989
Total British and Foreign	12,020,674	20,837,918	31,624,680	49,678,950	62,836,075	79,858,144
Proportion of Foreign........	33·2	41·9	29·7	27·8	26·15	34·47
Proportion of British	66·8	58·1	70·3	72·2	73·85	65·53
	100·0	100·0	100·0	100·0	100·0	100·00

* See note to Table III.

In Table IX I have again placed the Foreign flags in the order of highest tonnage, not in alphabetical order. Norway is again at the top, having kept the highest proportion for four decades. Were Sweden and Norway put together they would show more than any other two flags. Their hold on the wood carrying trade from Sweden and Norway mainly explains this. Germany keeps the second place, as in the last three decades; Sweden is third; Holland becomes fourth; Denmark fifth; Spain follows as sixth; and France as seventh. A large increase is shown by Belgium; the Russian tonnage nearly doubled; the American more than doubled; and the Italian trebled.

The extent to which the work is done by steamers only is shown in:—

TABLE X.—*Showing the Tonnage of Steam Vessels, with Cargoes only, and their Nationalities, Entered and Cleared at Ports in the United Kingdom from and to Foreign Countries and British Possessions, in the Years* 1860, 1870, 1880, 1890, *and* 1900.

Nationality.	1860.	1870.	1880.	1890.	1900.
British	3,976,852	11,825,002	27,052,131	42,127,266	50,226,821*
German	344,959	399,673	1,149,645	2,523,635	3,940,999
Norwegian	18,115	27,952	138,276	917,105	3,657,750
Dutch	122,838	161,062	875,774	1,645,283	2,648,473
Swedish	16,165	62,556	593,175	826,692	2,356,764
Spanish	37,088	180,119	518,726	1,114,086	2,224,885
Danish	29,652	92,561	536,417	1,029,044	2,136,978
French	42,699	206,602	552,758	984,550	1,745,694
Belgian	58,849	288,095	457,338	692,994	1,292,113
Italian	432	3,765	7,796	67,319	881,663
Russian	20,717	98,561	46,697	145,218	556,433
American	8,809	4,852	139,070	108,558	531,394
Austrian	300	6,704	None	36,833	328,299
Other countries	27,541	19,138	53,253	237,177	754,634
Total foreign	728,164	1,551,640	5,071,925	10,328,494	23,056,079
Total British and foreign	4,705,016	18,876,642	32,124,056	52,455,760	73,282,900
Proportion of foreign	15·5	11·6	15·9	19·69	31·46
„ British	84·5	88·4	84·1	80·31	68·54
	100·0	100·0	100·0	100·0	100·0

* See note to Table III.

The figures change slightly in Table X, when the sailing ships are excluded and the comparisons made with steam vessels. In my last paper I emphasised the increase in the entries and clearances of foreign steamers in the decade—they were 10 millions against 5 millions in 1880; but in 1900 there was a further increase of nearly 13 millions, raising the total from 10 to 23 million tons. Germany is at the top of the foreign nations, followed by Norway, Holland, Sweden, Spain, Denmark, and France. All the entries and clearances increased largely, and the various countries abroad seem to have freely used the old steamers we sold to them in competition with us in our own trade. It is not singular to find therefore that our proportion of the steamer business declined in the decade just ended from 80·31 to 68·54, and that the proportion of foreign tonnage grew from 19·69 to 31·46. It is, however, very satisfactory in one sense. We are often assured that we are the best hated people throughout the near Continental States, but we are helped to believe that such hatred must be very superficial, or these foreign flags would not in constantly increasing quantities visit our free ports. It would seem rather that in maritime transactions, at any rate, we enjoy the full confidence of all the leading European States in a constantly increasing degree.

TABLE XI.—*Showing the Tonnage of Steam Vessels, British and Foreign, Entered and Cleared at Ports in the United Kingdom, with Cargoes and in Ballast, from and to Foreign Countries and British Possessions, for the Years* 1840, 1850, 1860, 1870, 1880, 1890, *and* 1900.

Year.	Total Tons of Steam Vessels.	Of which British.	Percentage of British.	Increase per Cent. of British Steam.
1840	791,555	663,048	83	—
'50	2,209,847	1,802,955	81	171
'60	4,967,473	4,186,620	84	132
'70	15,072,831	13,341,058	88	228
'80	37,213,942	30,976,037	83	132
'90	61,685,009	49,023,775	79	58
1900	90,299,441*	60,302,653*	66	23

* See note to Table III.

In Table XI I show the total steamer entries and clearances under all flags, with and without cargoes. The growth of our trade, as well as the part played in it by steam, is thus clearly indicated: nearly 62 millions in 1890 becoming over 90 millions in 1900. The growth of foreign tonnage in our trade is very marked here. But, as I have before pointed out, our compensation lies in the large extent to which the long over-sea voyages of so many States is done by our ships, without making any record in our returns. The foreign tonnage, by its short trips and frequent records, in fact gets credit in excess of its contribution to cargo carrying, while our tonnage does so much work for which it gets no credit at all in the returns.

I only mention these matters as explanations, not by any means in the way of either objection or complaint.

The preponderance of our flag in the former decades was so large, that it was not necessary to emphasise much other work which the figures did not indicate. But I may be permitted again to remark how strikingly the decrease of the British percentage in 1900 to 66 indicates the danger of hasty use of percentages, because the drop in the percentage coincided with an increase of 11½ million tons in the entries and clearances under our flag.

I have perhaps said enough regarding entries and clearances, and the quantities and values of goods carried, and now proceed to give some particulars regarding the British fleet by which our share of the world's work is done.

TABLE XII.—*Showing the Number and Tonnage of Vessels, Steam and Sailing, Registered as belonging to the United Kingdom, for the Years* 1850. 1860, 1870, 1880, 1890, *and* 1900.

Year.	Number.	Net Tonnage.	Rate of Increase.
			Per cnt.
1850	25,984	3,564,833	—
'60	27,663	4,658,687	30·7
'70	26,367	5,690,789	22·1
'80	25,185	6,574,513	15·5
'90	21,233	7,945,071	20·8
1900	19,751	9,280,164	16·8

My first observation is that the increase of 11 millions of British entries and clearances was accomplished by a reduced number of vessels. I have repeatedly directed attention in previous papers to the reduction in the number of ships under the British flag. Between 1850 and 1880 the number was nearly stationary; it was 25,185 in 1880, it fell to 21,233 in 1890, and to 19,751 in 1900.

As to how the registered vessels shown in Table XII were divided between steam and sailing vessels is shown in:—

TABLE XIII.—*Showing the Number of Vessels Registered as belonging to the United Kingdom, with their Average Size, distinguishing Steam from Sailing, for the Years* 1850, 1860, 1870, 1880, 1890, *and* 1900.

Year.	Steamers.				Sailing Vessels.			
	Number of Steamers.	Net Tonnage.	Increase.	Average Size.	Number of Vessels.	Net Tonnage.	Increase.	Average Size.
			Per cnt.				Per cnt.	
1850	1,187	168,474	—	140	24,797	3,396,359	—	130
'60	2,000	454,327	170	227	25,663	4,204,360	23·7	164
'70	3,178	1,112,934	145	350	23,189	4,577,855	8·8	198
							Decrease.	
'80	5,247	2,723,468	144	518	19,938	3,851,045	15·8	193
'90	7,381	5,037,666	85	682	13,852	2,907,405	24·5	210
1900	9,178	7,202,509	43	785	10,573	2,077,655	28·5	196

By Table XIII, it appears that while the number of sailing vessels fell from 19,938 in 1880, and 13,852 in 1890, to 10,573 in 1900, the number of steamers increased from 5,247 in 1880, and 7,381 in 1890, to 9,178 in 1900, indicating a change in the composition of our fleet of the utmost importance. Sailing vessels fell nearly half their tonnage, from nearly 4 millions in 1880 to little over 2 million tons.

Steam vessels increased from less than $2\frac{3}{4}$ million tons to nearly $7\frac{1}{4}$ million tons, and the average size of sailing vessels has fallen under 200 tons, while that of steamers has increased to nearly 800 tons. Altogether, the number of vessels under our flag is less than at any period during the last half century. We had 25,984 in 1850, and 19,751 in 1900.

Mere numbers, however, have in this case to be corrected by the size of the vessels, and whether they are sailing or steam. The average size of sailing vessels is decreasing, as well as their number. Both the size and number of steam vessels have largely increased. It may indeed be said roundly that the building of sailing vessels has ceased, except for very small coasting purposes.

The result is that our effective carrying power (reckoning one ton of steam as equal to three tons of sail tonnage—I retain the opinion expressed in my previous paper that this allowance is inadequate) had grown to nearly 24 million tons in 1900, against 18 million tons in 1890, 12 millions in 1880, 8 millions in 1870, and 5½ millions in 1860. In the last decade of 1891-1900 the effective tonnage increase is 33 per cent., and compared with 1880 it has doubled. It is only because we have lived into a pessimistic time, in which it is the fashion to depreciate whatever we do ourselves, and to exaggerate systematically what other flags do, or say they are going to do, that we hear warnings of the decadence of our flag; but in this Society, where comparative figures get a fair chance of appreciation, I feel sure that no symptoms of decadence will be discovered in the figures I have just repeated. This conclusion will be confirmed when I now submit Table XIV, showing the proportion of entries and clearances in other States done by the national flag, by the British flag, and by all other foreign flags.

The proportion of Russian trade done by Russian ships has slightly improved. It was 7·3 per cent. in my last paper, it had grown to 10·3 in 1898, the last year for which I could obtain the record. Very probably it is a little more now. During the last decade chiefly, the volunteer fleet came into existence; it was built in English ports, and stands in a highly privileged position to the Government, which besides other advantages pays all the Suez canal dues on its voyages out and home. The large traffic between the Black Sea ports and the new Russian ports in the Far East has given it constant employment. Some of the vessels have great speed, and are capable of being made into formidable vessels of war in case of need. Though they mark an improved position in the proportion of entries and clearances under the Russian flag in Russian ports, it is doubtful whether they could be run at all as common cargo ships, apart from the privileged position accorded to them by the Russian Government. It does not appear from Table XIV that ordinary trading vessels under the Russian flag

TABLE XIV.—*Total Tonnage of Vessels, Steam and Sailing, Entered and Cleared, with Cargoes and in Ballast, in the Foreign Trade of the undermentioned Countries.*

Year.	Country.	Under National Flag.	Percentage of Total Tonnage.	Under British Flag	Percentage of Total Tonnage.	Under other Flags.	Percentage of Total Tonnage.	Total Tonnage.	Percentage of Total Tonnage under all Flags other than National.	Same Percentage in my Paper for 1890.	Same Percentage in my Paper for 1880.
1900....	United Kingdom	—	—	62,710,836	63·7	35,812,857	—	98,523,693	36·3	—	—
1898....	Russia	1,794,749	10·3	7,812,463	44·7	7,864,702	45·0	17,471,914	89·7	92·7	86·5
'99....	Norway......... ...	4,218,940	66·1	765,729	12·0	1,396,219	21·9	6,330,888	33·9	36·9	30·0
'99....	Sweden	6,271,039	38·3	1,966,768	12·0	8,146,940	49·7	16,384,747	61·7	66·3	64·6
'99....	Germany	13,383,514	47·5	8,424,687	29·9	6,371,625	22·6	28,179,826	52·5	57·6	62·4
'99 ...	Holland	4,697,251	25·0	8,389,483	44·6	5,739,186	30·4	18,825,920	75·0	69·5	69·3
1900 ..	Belgium	2,765,166	16·3	7,564,392	44·6	6,648,088	39·1	16,977,646	83·7	—	—
1899....	France	10,137,277	28·4	15,350,161	43·0	10,205,374	28·6	35,692,812	71·6	68·9	72·0
'99....	Portugal	1,247,648	7·3	9,811,570	57·3	6,069,497	35·4	17,128,715	92·7	—	—
'99 ..	Italy	19,028,051	48·8	9,265,791	23·8	10,663,412	27·4	38,957,254	51·2	75·2	61·0
1900....	United States*...	7,980,353	16·9	24,883,543	52·8	14,287,359	30·3	47,151,255	83·1	77·9	78·7

* Exclusive of lake trade between United States and Canada.

have increased to any considerable extent. The entries and clearances in Russian ports under foreign flags in 1889 were 92·7: in 1898 they were still as high as 89·7. The trade for 1898 amounted to nearly 17½ million tons. The British proportion of this last figure was 44·7 per cent., that of all other foreign flags was 45 per cent.; in 1889 our proportion was 55·1 per cent., and the proportion of all other foreign flags was 37·6 per cent. No doubt this marks a considerable growth in the figure of other foreign flags in the Russian trade. Probably the change is largely attributable to the bad harvests experienced by Russia in recent years. She has had less to export, the entries and clearances, which were nearly 17½ millions in 1898, were 18 millions in 1897, 19 millions in 1895, and nearly 20 millions in 1894. The fact remains that of the reduced trade we did 44·7 per cent., and all other foreign flags together 45 per cent.

Norway shows a larger proportion of entries and clearances done by its own flag compared with 1889, and that the British proportion fell from 16·3 in that year to 12 per cent. in 1899. The proportion of foreign tonnage in the Swedish trade fell from 66·3 to 61·7 per cent. It would seem that this was mainly at our expense, for while the proportion of other flags in Swedish ports was 44·2 in 1889, in 1899 this figure had improved to 49·7, whereas our proportion in 1889 was 22·1, and in 1899 only 12 per cent.

There are economic explanations for this. To whatever extent the Swedish trade requires small ships, we have practically given it up, and the Scandinavian nations have been the chief buyers of the smaller and older class of steamers which it has suited us to sell; their work in the Swedish trade has largely contributed to produce the above changes in the figures.

The trade of Germany in 1889 was 28 million tons, of which 47½ per cent. was done by the German flag, nearly 30 per cent. by the British flag, and 22·6 by other flags. The position of the German flag in its own trade is improved, as one would expect. In my Paper for 1880 it was done by foreign tonnage to the extent of 62·4, in the next decade by 57·6, and in the last decade the proportion of foreign fell to 52½ per cent. The great efforts which Germany is now putting forth to increase its oversea carrying, and the sympathetic patronage and assistance given by the German Government to these efforts, may very likely have further improved these German figures by this time. Maritime efforts seem to be more appreciated by some rulers and governments than by others.

Holland appears to be declining in its maritime position, only 25 per cent. of its entries and clearances were under the Dutch flag, 44·6 were under the British flag, and 30·4 under other foreign flags; this latter figure compares with 17·5 in my last paper, and largely explains the fall in the British proportion from 52 in 1889 to 44·6 in the decade under review. The explanation is not easy, especially as the trade appears to have increased in the decade from nearly 11 million to nearly 19 million tons. The proportion under the national flag has been declining throughout the half century. It was 41·8 in 1850, and 25 per cent. in 1899; while foreign tonnage, which was 58·2 in 1850, increased with almost constant progression to 75 per cent. in 1899.

Belgium, with about the same trade as Holland, did less under its flag than in 1850. The decline in the proportion has been constant: in 1890 it was 19·0 per cent., and in 1900 only 16·3 per cent. In both Holland and Belgium there was more tonnage employed under the British flag than under all other foreign flags put together.

The French figures are very interesting. The total entries and clearances in 1899 were 35,692,812 tons, a fair increase during the decade from 28,967,848 tons in 1890. The French proportion of this tonnage was 31·9 per cent. for 1890, and 28·4 per cent. for 1899. It varied very little throughout the decade, but generally downwards. The British proportion of entries and clearances in 1889 was represented by 40·6 per cent.; in the larger trade of 1899 it was 43 per cent. In my Paper for 1880 the percentage of all foreign flags in the French trade was 72 per cent.; in the next decade, perhaps helped by bounties, it fell to 63·9 per cent., but by 1899 the proportion of foreign had again grown to 71·6 per cent. Throughout the last decade a large number of sailing vessels appear to have been built in France, including some large vessels; but the average size is so small, that the bulk must have been for petit cabotage, from which, as well as from the Algerian coast, foreign ships are excluded. The average size of the sailing ships built in 1900 appears to be only 70 tons, and the effect on the proportion of French tonnage in the French entries and clearances being what I have stated, viz., only 28·4 per cent. in 1899, against 31·9 per cent. in 1890, it is difficult to see what benefit the French Government and people have derived from the large sums paid in postal subsidies, and in bounties for construction and navigation. It would appear that the British tonnage in French ports exceeds by one-half all other foreign tonnage put together, and by about the same proportion does it exceed the tonnage under the national flag. If one could be assured that this would necessarily and always be the result of bounties, it would of course suit us that they should be extended in other States. As affecting France, for whose supposed interest they are given, they are certainly remarkable.

On the Italian figures it is difficult to say anything. A change in the method of making the return appears to have been made in 1897, by which the entries and clearances were increased from 17 million tons in 1896 to 36½ million tons in 1898, and to 39 million tons in 1899. As I am unacquainted with any facts to justify these figures, I say nothing about them pending some explanation or verification.

The United States have been much in evidence lately—buying fleets, and indicating what an important part they are about to play in ocean carrying. What can be said against such a frankly disclosed intention? They were once great maritime carriers; they were formidable competitors of ours; they taught us new ideas regarding the size and forms of ships, and we—not too proud to learn—bettered the instruction. They had virgin forests at their disposal. In our competition with their wooden sailing ships we were beaten. In 1850 they did nearly 60 per cent. of the entries and clearances in the United States ports; by 1860 their proportion was 70·8 per cent. Then two things happened, which not only stopped their progress, but put the American flag into a very subordinate position for the rest of the century. The Southern rebellion led to the loss of their fleet, either by destruction, by capture, or by sale. We had in the meantime found it possible to build ships of iron and to propel them by steam. Hence, by 1870, their proportion in American ports fell from 70·8 per cent. to 38·2 per cent., by 1880 it further fell to 18·9 per cent., in 1890 it was only 22·5 per cent., and so lately as 1900 it was 21·9 per cent.

It is a remarkable fact that notwithstanding the large increase in the total tonnage entered and cleared in American ports since 1860, the amount of entries and clearances under the American flag remains practically the same now as it was forty years ago.

The figures are as follows:—[2]

Tonnage Entered and Cleared with Cargoes and in Ballast in the Foreign Trade of the United States.

Year.	Total Tonnage.	Tonnage under American Flag.	Percentage of Total Tonnage.
1860	17,065,125	12,087,209	70·8
1900	56,444,146	12,344,570	21·9

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[2] These figures, as well as those on which the foregoing percentages are based, include the lake trade between the United States and Canada, as the figures exclusive of this trade are not available for the earlier years. It will be observed, however, that the figures in Table XIV are exclusive of the lake trade.

The percentage of tonnage in the United States ports which was not national, was, in my Paper for 1880, 78·7 per cent.; in 1890, 77·9 per cent.; and in 1900, 83·1 per cent. The British proportion was, in 1880, 51·7 per cent.; in 1890, 52·8 per cent.; and in 1900, 52·8 per cent. Very little variation.

This table shows, though still only in some degree, the work done by British vessels in the trade of foreign countries, which must be allowed for somehow before the relative position of our flag can be appreciated. It also furnishes an important set-off to the figures of foreign tonnage in the transactions of our ports. I may add that these operations by our flag in and between ports abroad are the main source of Sir R. Giffen's "Invisible Export," and a remarkable measure of the degree in which we trade internationally.

It will be observed that the proportion of entries and clearances under the British flag, and under the national flag in the countries stated, was as follows:—

	Under the British Flag.	Under the National Flag.
	Per cnt.	Per cnt.
Portugal	57·3	7·3
United States	52·8	16·9
Russia	44·7	10·3
Holland	44·6	25·0
Belgium	44·6	16·3
France	43·0	28·4
Germany	29·9	47·5
Italy	23·8	48·8
Norway	12·0	66·1
Sweden	12·0	38·3

Table XV indicates some remarkable changes since 1890. It excludes small ships, and, on the authority of Lloyd's Register Book, gives an account of the size and tonnage of the merchant navies of the various countries of the world, distinguishing steam vessels from sailing. In 1890 the British Empire had 8½ million tons, with a percentage of 60·5 steam. In 1900 this had grown to 9½ million tons, with a percentage of 77·9 steam. The United States tonnage increased nearly 50 per cent., and its proportion of steam had more than doubled. Germany had a similar increase in tonnage, and its increased proportion of steam was under 25 per cent. France had increased only from 730,464 tons to 840,674 tons in 1900, and the proportion of steam fell from 67·7 to 64·5.

The tonnage under the Norwegian flag fell from 1,516,069 tons to 1,343,252, but the proportion of steam grew from 11·7 to 34·8; it nearly trebled, in fact.

The proportion of steamer tonnage for the enumerated nations gives an average of 67·5, against the British average of 77·9.

MERCHANT NAVIES OF THE WORLD.

TABLE XV.—*The Number and Tonnage of Vessels of* 100 *Tons* and upwards belonging to each of the several Countries of the World, as recorded in "Lloyd's Register Book."*

Country.	1890.							1900.						
	Steamers.		Sailing Vessels.		Total.		Per-centage of Steamer Tonnage.	Steamers.		Sailing Vessels.		Total.		Per-centage of Steamer Tonnage.
	Number.	Net Tonnage.	Number.	Net Tonnage.	Number.	Net Tonnage.		Number.	Net Tonnage.	Number.	Net Tonnage.	Number.	Net Tonnage.	
United Kingdom ...	5,574	4,874,912	3,593	2,467,212	9,167	7,342,124	66·4	7,020	7,072,401	1,894	1,727,687	8,914	8,800,088	80·3
Colonies	829	281,903	2,075	894,040	2,904	1,175,943	24·0	910	378,925	1,014	384,477	1,924	763,402	49·6
Total British......	6,403	5,156,815	5,668	3,361,252	12,071	8,518,067	60·5	7,930	7,451,326	2,908	2,112,164	10,838	9,563,490	77·9
United States	416	363,985	2,856	1,306,488	3,272	1,670,473	21·8	932	1,031,216	2,203	1,295,305	3,135	2,326,521	44·4
Austro-Hungary ...	130	86,930	238	118,482	368	205,412	42·3	214	240,808	56	28,613	270	269,421	89·4
Belgium	77	72,058	8	4,104	85	76,162	94·6	115	111,624	2	420	117	112,044	99·6
Denmark	217	98,664	591	120,993	808	219,657	44·9	369	240,599	433	106,738	802	347,337	69·2
Holland	162	147,031	382	161,762	544	308,793	47·6	289	307,574	117	63,068	406	370,642	83·0
France..................	526	494,960	854	235,504	1,380	730,464	67·7	662	542,305	552	298,369	1,214	840,674	64·5
Germany..............	741	638,065	1,135	640,400	1,876	1,278,465	49·9	1,209	1,344,605	501	490,114	1,710	1,834,719	73·3
Italy	212	190,192	1,343	515,942	1,555	706,134	26·9	312	343,020	864	443,306	1,176	786,326	43·6
Japan	165	88,024	124	33,123	289	121,147	72·6	484	303,303	582	86,370	1,066	389,673	77·8
Norway	395	178,383	2,974	1,337,686	3,369	1,516,069	11·7	806	467,123	1,574	876,129	2,380	1,343,252	34·8
Russia..................	236	106,155	945	271,265	1,181	377,420	28·1	496	292,277	750	251,405	1,246	543,682	53·7
Spain	389	270,224	494	119,994	883	390,218	69·2	422	416,882	175	52,549	597	469,431	88·8
Sweden	471	136,696	999	294,183	1,470	430,879	31·7	678	260,023	755	218,722	1,433	478,745	54·3
Other countries......	568	267,332	2,579	645,101	3,147	912,433	29·3	980	503,828	1,052	351,098	2,032	854,926	58·9
Total	11,108	8,295,514	21,190	9,166,279	32,298	17,461,793	47·5	15,898	13,856,513	12,524	6,674,370	28,422	20,530,883	67·5

* In the case of steamers, 100 tons gross and upwards; in the case of sailing vessels, 100 tons net and upwards.

TABLE XVI.—*Number and Tonnage of all Vessels of* 100 *Tons and upwards Built by each of the several Countries of the World during* 1890 *and* 1900, *as recorded in "Lloyd's Register Book."*

	1890.					
	Steam Vessels.		Sailing Vessels.		Total.	
	Number.	Gross Tons.	Number.	Net Tons.	Number.	Tons.
United Kingdom	632	1,076,220	84	121,015	716	1,197,235
Colonies	16	7,185	92	37,355	108	44,540
Total British	648	1,083,405	176	158,370	824	1,241,775
United States	30	58,903	145	89,975	175	148,878
Austro-Hungary	5	1,352	2	661	7	2,013
Denmark	12	8,685	9	1,500	21	10,185
France	14	27,666	18	6,896	32	34,562
Germany	56	87,382	12	15,083	68	102,465
Greece	—	—	32	8,704	32	8,704
Holland and Belgium	20	23,376	4	2,757	24	26,133
Italy	1	345	43	19,297	44	19,642
Japan	—	—	—	—	—	—
Norway	36	17,170	20	9,983	56	27,153
Russia	2	979	15	4,073	17	5,052
Sweden	33	12,692	—	—	33	12,692
Other countries	23	6,586	6	969	29	7,555
Total	880	1,328,541	482	318,268	1,362	1,646,809

	1900.					
	Steam Vessels.		Sailing Vessels.		Total.	
	Number.	Gross Tons.	Number.	Net Tons.	Number.	Tons
United Kingdom	645	1,452,802	6	6,605	651	1,459,407
Colonies	16	6,570	31	5,498	47	12,068
Total British	661	1,459,372	37	12,103	698	1,471,475
United States	93	192,560	104	105,371	197	297,931
Austro-Hungary	12	14,945	—	—	12	14,945
Denmark	9	16,163	11	1,831	20	17,994
France	13	31,094	52	70,224	65	101,318
Germany	70	203,179	20	8,671	90	211,850
Greece	—	—	—	—	—	—
Holland and Belgium	25	31,288	25	8,505	50	39,793
Italy	13	47,149	24	7,233	37	54,382
Japan	14	13,335	—	—	14	13,335
Norway	35	28,949	1	269	36	29,218
Russia	2	250	35	6,149	37	6,399
Sweden	17	5,447	5	729	22	6,176
Other countries	2	2,608	5	1,514	7	4,122
Total	966	2,046,339	319	222,599	1,285	2,268,938

Note.—The figures for steamers are based on the gross tonnage, and for sailing vessels on the net.

How the various flags stood regarding the number of ships built in 1890 and 1900 is shown by Table XVI, which excludes vessels under 100 tons, and is taken from Lloyd's Registry. The United States and Germany doubled their proportion. France nearly trebled its tonnage; this sounds large, but the increase was only from 34,562 tons to 101,318 tons, and this chiefly in sailing vessels, of which the bounties are the explanation. Italy nearly trebled its production, chiefly in steam—also largely explained by bounties. Of the total production in 1900, viz., 2,268,938 tons, the British portion is 1,471,475, or 64 per cent., of which 99·2 per cent. was steam.

TABLE XVII.—*Steel and Iron Vessels Built in the United Kingdom, and Classed by "Lloyd's Register," during the Years* 1880, 1890, *and* 1900.

	Steel.				Iron.			
	Steam.		Sailing.		Steam.		Sailing.	
	Number.	Gross Tons.	Number.	Gross Tons.	Number	Gross Tons.	Number.	Gross Tons.
1880	19	31,905	2	1,342	313	411,658	29	35,801
'90	469	921,491	56	107,578	91	39,226	4	5,294
1900	508	1,130,266	6	5,893	71	14,229	—	—

I pointed out in my last paper how rapidly steel was replacing iron in the construction of ships. The transformation has become still more complete during the last ten years. Out of a total of 579 steel and iron steamers classed by Lloyd's last year, only 71 were of iron, and no iron sailing vessels were classed at all.

REMOVALS FROM THE REGISTERS.

TABLE XVIII.—*Showing the Tonnage removed from the Registers of the United Kingdom in each Year from* 1891 *to* 1900.

Year.	Steam.		Sail.		Total Removed from the Registers.	
	Vessels.	Net Tons.	Vessels.	Net Tons.	Vessels.	Net Tons.
1891	321	241,564	678	156,039	999	397,603
'92	280	182,594	602	165,391	882	347,985
'93	318	229,331	633	168,564	951	397,895
'94	345	278,365	595	147,903	940	426,268
'95	406	346,514	618	178,465	1,024	524,979
'96	396	325,394	604	189,127	1,000	514,521
'97	435	365,412	647	190,664	1,082	556,076
'98	483	432,587	683	226,722	1,166	659,309
'99	514	458,321	717	171,137	1,231	629,458
1900	531	460,683	706	182,088	1,237	642,771
Total	4,029	3,320,765	6,483	1,776,100	10,512	5,096,865
Average	402	332,076	648	177,610	1,051	509,686
Average of the decade 1881-90	310	179,199	969	239,100	1,279	418,299

In my last paper I showed that during the decade 1881-90 an average of 969 sailing ships and 310 steamers disappeared from our registers every year. The pace slackened during the decade 1891-1900, but though the total number was less, viz., an average of 1,051 instead of 1,279, and only 648 sailing vessels instead of 969, the number of steamers that disappeared rose from an annual average of 310 to 402, and the total tonnage that went off increased from an annual average of 418,299 to 509,686 tons. No other State added half as much to its registers as went off our registers during the decade. Of course some of the vessels that disappeared were wrecked, some were broken up, but a large number were sold to foreigners, which partly explains the increases observed in the steamer tonnage of some flags, especially the Scandinavian, Spanish, and Italian. During the decade we added to the registers 6,431,958 tons, and there were from all causes removed from our registers 5,096,865 tons.

What shall we say? Is this the proof of decadence? I mark it rather as a sign of health and strength, courage, and enterprise in this great British industry. Without saying anything against the tonnage that we sold, it is enough to add that it was replaced by larger and more competent vessels, so that to the flag this loss was gain; and the competency to make it was the very best sign of the intelligent enterprise of those who made it.

WRECKS AND COLLISIONS.

I show separately the wrecks during the decade by:—

TABLE XIX.—*Showing the Number of Total Wrecks during the Years stated which occurred to British and Foreign Vessels on or near the Coasts of the United Kingdom, and the Number of Total Losses arising from Collision included therein.*

	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	Average of the Ten Years 1891-1900.	Average of the Ten Years 1881-90.
Wrecks involving total loss	427	434	249	489	434	323	430	358	376	356	387·6	462·8
Total losses from collisions included in the above figures	83	72	60	72	78	73	70	79	67	75	72·9	73·0

The satisfactory fact is shown in this table that the great reduction in wrecks on our coasts which characterised the decade 1881-90, made further progress between 1891 and 1900. The average of the former was 462·8; this figure fell in the last decade to 387·6.

In the total losses arising from collisions I regret to say there is no similar reduction. In fact, the figures for the two decades are nearly the same: 73·0 for 1881-90, only fell to 72·9 in 1891-1900. I stated my views on this subject fully in my last paper. The collisions continue. So does the inoperative system of penalties. These are often very heavy, always uncertain, and they are inflicted on innocent persons who do not cause the collisions, but suffer vicariously for the faults of those whose competency for their duties the Board of Trade has certified. I am not sanguine of any further reduction in the number of collisions until this system is radically changed. So long as the persons whose greater care could avoid collisions suffer next to nothing, and innocent persons pay the damages, and lawyers reap rich harvests out of the litigation, it seems probable that both the collisions and the litigation will continue. Possibly some day we may be wiser. When penalties are inflicted only on those who are to blame for collisions, and are of a character which need not be defeated by insurance, there will be fewer collisions and less litigation. In any case, it must be noted that in spite of all the Board of Trade regulations to prevent collisions, and the great improvements which have taken place in our maritime affairs in every other direction, in this serious matter there is no improvement. I record the fact with much regret.

MEN EMPLOYED.

TABLE XX.—*Showing the Number of Men Employed in Steam and Sailing Vessels in the Home, Foreign, and Fishing Trades, belonging to the United Kingdom, Isle of Man, and Channel Islands, and distinguishing British from Foreign Seamen.*

Year.	Number of Men Employed in Steamers.	Number of Men Employed in Sailing Vessels.	Total.	Of which British.	Foreign.
1850....	8,700	142,730	151,430	—	—
'60...	26,105	145,487	171,592	157,312	14,280
'70....	48,755	147,207	195,962	177,951	18,011
'80....	84,304	108,668	192,972	169,692	23,280
'90....	129,366	84,008	213,374	186,147	27,227
1900...	161,170	50,255	211,425	174,532	36,893

It was certain that the number of men employed in sailing vessels would show a very large reduction, for the simple reason that the number of sailing vessels is so largely reduced. In 1870 we had 147,207 men employed in sailing ships; in 1900, only 50,255. In steamers in 1870 we had 48,755 men employed; in 1880, 84,304; in 1890, 129,366, and in 1900, 161,170. Taking the number of men employed in sailing and steam together, it will be seen that the total has fallen from 213,374 in 1880 to 211,425 in 1900. This reduction is explained by the large decrease in the number of sailing vessels already alluded to, and also by the increase in the size of steamers. These figures exclude Lascars. Adding Lascars, the total number of men employed in 1900 was 247,448. The proportion of foreigners employed to British (Asiatics excluded) was in 1870, 9·2 per cent.; in 1880, 12·1 per cent.; in 1890, 12·7 per cent.; and in 1900, 17·4 per cent. This proportion would be less if Asiatics were included as British seamen. If, on the other hand, the Asiatics are included as foreigners, the proportion would be larger. As to the proportion of foreigners in our vessels, however regrettable it may be, I do not see the grounds either for the surprise or anxiety which finds expression in newspapers and reviews. Having regard to the large proportion of the over-sea carrying trade done by our flag for foreign States, it ought not to be a matter of surprise that the seafaring people of such States get some employment in our ships, especially as the wages we pay are higher, and the food and accommodation better than in foreign vessels. Of course in one respect it would suit us better to have only British subjects in our ships, but we live and trade so internationally as to make it quite impossible, even if it were reasonable, to object to foreign labour. If we decided that our ships should carry only for our own country and its colonies and dependencies, the tonnage under our flag would be far too much, and would certainly undergo large and immediate reduction. That would be far more against both our interest and security than the employment of some foreign labour incidental to our extensive trade in foreign ports. This fact, indeed, is a mere consequence of the freedom of our trade. Moreover, to look at the matter practically, with the pressure on our labour market for the last three years, where would the 70,000 men be found in the United Kingdom if we suddenly decided to employ no foreigners or Lascars in British ships? We have no such amount of able-bodied labourers to spare from other industries. It is, moreover, becoming clearer that during any naval war in which we might be engaged, our maritime trade would be so reduced that, while the war lasted, tho bulk of the foreign labour could be dispensed with. At the same time all that is possible to do to keep up British labour on board British ships should be done, so as to keep the maritime spirit of the nation active. In this connection it is satisfactory to observe that some practical steps are being now taken to increase the number of apprentices, to which efforts I wish the greatest success. It is not, however, a matter in which Parliament can do anything. The regulations are too numerous already; as these increased, apprentices became fewer, and the number of foreigners in our service increased. The time may rather have come to consider whether much of this well-intended but mischievous interference between master and servant should not be repealed. It would certainly not be tolerated between any class of masters and servants on shore, and does not seem to have answered in relation to employment at sea.

MORTALITY AT SEA.

TABLE XXI.—*Deaths of Seamen reported as having occurred at Sea from Various Causes in Merchant Vessels Registered in the United Kingdom, Compared with the Number of Seamen required to Man the Vessels which were Employed during each of the Years stated.*

Year.	Steam Vessels.								
	Total Number of Seamen Employed, including Masters.	Deaths by Wrecks and Casualties.		Deaths by Accidents other than Wrecks or Casualties.		Deaths by Disease, &c.		Total.	
		Number.	Percentage.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.
1891	122,342	374	0·31	187	0·11	267	0·22	778	0·64
'92	126,728	302	0·24	164	0·13	372	0·29	838	0·66
'93	127,703	292	0·23	103	0·08	210	0·16	605	0·47
'94	128,479	572	0·44	164	0·12	284	0·22	1,020	0·79
'95	129,739	304	0·23	158	0·12	274	0·21	736	0·57
'96	129,089	416	0·32	149	0·12	266	0·20	831	0·64
'97	131,145	369	0·28	204	0·16	263	0·20	836	0·64
'98	131,156	203	0·15	120	0·09	240	0·18	563	0·43
'99	133,471	607	0·45	157	0·12	249	0·19	1,013	0·76
1900	136,155	374	0·27	127	0·09	339	0·25	840	0·62
Average of the ten years	—	381	0·29	148	0·11	276	0·21	806	0·62

Year.	Sailing Vessels.								
	Total Number of Seamen Employed, including Masters.	Deaths by Wrecks and Casualties.		Deaths by Accidents other than Wrecks or Casualties.		Deaths by Disease, &c.		Total.	
		Number.	Percentage.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.
1891	62,154	800	1·29	228	0·37	203	0·33	1,231	1·98
'92	60,765	700	1·15	225	0·37	220	0·36	1,145	1·88
'93	61,325	528	0·86	197	0·32	152	0·25	877	1·43
'94	59,188	607	1·03	245	0·41	164	0·27	1,016	1·71
'95	56,754	583	1·03	221	0·39	182	0·32	986	1·74
'96	53,825	634	1·18	228	0·42	173	0·32	1,035	1·92
'97	50,858	408	0·80	179	0·35	135	0·27	722	1·42
'98	47,286	246	0·52	146	0·31	160	0·34	552	1·17
'99	43,445	425	0·98	129	0·30	149	0·34	703	1·62
1900	41,017	303	0·74	104	0·25	128	0·31	535	1·30
Average of the ten years	—	523	0·96	190	0·34	166	0·31	880	1·61

Note.—Fishing vessels and their crews, yachts and their crews, as well as Lascars, are entirely excluded from the above figures.

The records on this very important subject for the decade are satisfactory. Since the angry controversies on the subject it has been much more scientifically treated. It is quite understood now, that before coming to any conclusion as to the loss of life from sea casualties, we must deduct from the deaths which happen at sea those which arise from disease and accidents to which men are exposed wherever they are employed, whether at sea or on land. The public returns are constructed so as to enable this to be easily done. If there were no deaths from wrecks or sea casualties, our seafaring population would, if employed on shore, yield the ordinary quota of deaths. The variety of climate to which seamen are exposed, the hardships and exposure to which night and day occupation renders them liable, and the dissipations in which they sometimes indulge, have also to be considered. It happens also that the figures of a particular year in a decade are affected by specially disastrous storms as in 1894 and 1899.

But the question which the statistician or the philanthropist asks is the simple one—What is the general result? And I answer, unhesitatingly, that the table shows improvement. With the exception of the two years named, the number of steamer deaths by wreck and casualties was low. The highest was 0·45 per cent. of those employed in 1899, and 0·44 per cent. in 1894, but one year in the decade it is as low as 0·15 per cent., and the average is 0·29 per cent. The deaths from the same causes in sailing vessels were highest in 1891, 1·29 per cent., and lowest in 1898, 0·52 per cent. The average for the decade was 0·96 per cent. It still seems to be true that the loss of life on board sailing vessels from wreck and casualty is three times that on board steamers. Both as regards steam and sailing vessels unquestionably greater care is exercised by captains and officers; food conditions are all better than they used to be; and having regard to the fine air in which a sailor may live, his life chance ought to be more than equal to that of most labourers on shore.

I have given the best information in my power as regards the loss of life. These figures have to be taken always with some qualifications, so difficult is it to be certain that the area on which the ratio is calculated is correct, and that the lives exposed to risk are so exposed continuously; as a matter of fact they are not. But as these qualifications applied equally to other decades, the comparative instruction which results from the figures is probably very near the truth. Of course, if a quarter of a million human beings are employed anywhere, such a number would yield its quota of deaths from accident, disease, &c., apart from accidents directly arising from the particular employment. The vessels are much better than formerly, the accommodation for the crews is better, food is much better, and the sanitary arrangements are better. No doubt there is room for improvement, but so there is in all our towns, if the current literature on the Housing Question is half true.

I am confirmed in this view by a wider consideration. Marine underwriters are probably the most acute judges as to whether sea risks are increasing or diminishing. I have made inquiry as to premiums charged on leading classes of risks in 1880, 1890, and 1900. Only as a sample I give the following table :—

REDUCTION IN PREMIUMS OF MARINE INSURANCE.

TABLE XXII.—*Rates of Premium by the best Vessels on various Voyages as under.*

	Premium in 1880.		Premium in 1890.		Fall per Cent.	Rise per Cent.	Premium in 1900.		Fall since 1890.	Rise since 1890.	Total Fall.	Total Rise.
Specie per steamers.	*s.*	*d.*	*s.*	*d.*			*s.*	*d.*				
From Mexico	10	–	6	–	40	—	5	–	16	—	50	—
,, New York	3	4	2	–	40	—	1	3	37	—	62	—
,, Australia........................	12	6	5	9	54	—	4	6	22	—	64	—
,, South Africa	7	6	4	–	47	—	2	6	38	—	66	—
To Rio Janeiro	5	–	3	–	40	—	2	6	16	—	50	—
,, Bombay	5	–	3	–	40	—	2	6	16	—	50	—
Average fall....................	—		—		43	—	—		24	—	57	—
Goods f.p.a. per steamers.												
To St. Petersburg (summer)	10	–	6	8	33	—	6	8	—	—	33	—
,, Mediterranean	10	–	6	–	40	—	6	–	—	—	40	—
,, Cape ports	15	–	7	6	50	—	7	6	—	—	50	—
,, Bombay	7	6	6	3	17	—	5	–	20	—	33	—
,, Hong Kong	17	6	12	6	29	—	7	6	40	—	57	—
,, Melbourne	12	6	8	9	30	—	7	6	14	—	40	—
,, New York...........................	6	8	5	–	25	—	4	–	20	—	40	—
,, West Indies	10	–	10	–	—	—	6	8	33	—	33	—
,, Montreal (summer)...........	7	6	6	8	11	—	7	6	—	12	—	—
Average fall	—		—		26	—	—		12	—	36	—
Goods f.p.a. per steamers.												
From St. Petersburg (sum'r)	10	–	7	6	25	—	6	8	11	—	33	—
,, Mediterranean	7	6	6	–	20	—	6	–	—	—	20	—
,, Cape ports	12	6	10	–	20	—	6	8	33	—	47	—
,, Bombay	15	–	6	3	58	—	6	3	—	—	55	—
,, Hong Kong	27	6	12	6	55	—	10	–	20	—	63	—
,, Melbourne	20	–	10	–	50	—	7	6	25	—	62	—
,, New York	7	6	5	–	33	—	5	–	—	—	33	—
,, West Indies	12	6	10	–	20	—	10	–	—	—	20	—
,, Montreal (summer)	6	8	7	6	—	12	9	6	—	27	—	42
Average fall	—		—		30	—	—		7	—	32	—

TABLE XXII *Contd.—Rates of Premium by the best Vessels on various Voyages.*

	Premium in 1880.		Premium in 1890.		Fall per Cent	Rise per Cent.	Premium in 1900.		Fall since 1890.	Rise since 1890.	Total Fall.	Total Rise.
Sailers.	*s.*	*d.*	*s.*	*d.*			*s.*	*d.*				
Wool from Melbourne	30	–	20	–	33	—	25	–	—	25	16	—
Nitrate „ W. Co. S. Am....	40	–	27	6	31	—	32	6	—	18	19	—
Jute „ Calcutta	30	–	30	–	—	—	45	–	—	50	—	50
Grain „ Frisco	40	–	30	–	25	—	35	–	—	16	12	—
Goods to Melbourne	20	–	17	6	17	—	22	6	—	29	—	12
Average fall	—		—		**21**	—	—		—	**28**	—	**3½**
Cargo steamers.												
Cotton—Galveston to U.K.....	15	–	15	–	—	—	20	–	—	33	—	33
Rice—Rangoon to U.K.	25	–	12	6	50	—	11	3	10	—	55	—
Coals—Tyne to Genoa	12	6	7	6	40	—	7	6	—	--	40	—
Grain—Odessa to U.K.(sum'r)	12	6	10	–	20	—	10	–	—	—	20	—
„ „ „ (winter)	25	–	20	–	20	—	20	–	—	—	20	—
„ New York to U.K.	15	–	10	–	33	—	10	–	—	—	33	—
Average fall....................	—		—		**27**	—	—		—	—	**23**	—
„ **rise**	—		—		—	—	—		—	**4**	—	—

In every trade except one there is a large reduction in steamer premiums. The exception is in the St. Lawrence risks. On sailing ships there has been very little reduction from the premiums current twenty years ago, and there is a rise in the premiums current in 1890. Generally it may be said that the decline in steamer premiums from 1880 to 1900 on specie was about 57 per cent., and on goods by liners about 34 per cent. On goods by ordinary cargo steamers there was a fall between 1880 and 1890 of about 27 per cent., but between 1890 and 1900 there was very little change. It is said, and no doubt it is true, that some of this decline in insurance premiums is due to increased competition between underwriters; but after due allowance is made for that, it seems to confirm the lesson taught by the reduced loss of life at sea, viz., that traffic by sea is far safer than it ever was, and reflects credit on British shipbuilders, marine architects, captains, and officers, whose minds have for a long time been bent on the accomplishment of this most gratifying result.

SUEZ CANAL TRAFFIC.

TABLE XXIII.—*Showing the Number and Net Tonnage of Vessels that passed through the Suez Canal in* 1870, 1880, 1890, *and* 1900.

Year.	Number of Vessels.	Net Tonnage.	Transit Receipts.	Mean Net Tonnage per Vessel.	Proportion of British Vessels to Total Tonnage.
			frs.		Per cnt.
1870	486	436,609	5,159,327	898	—
'80	2,026	3,057,421	39,840,487	1,509	79·97
'90 ...	3,389	6,890,094	66,984,000	2,033	77·37
1900	3,441	9,738,152	90,623,608	2,830	56·73

NOTE.—The above figures include warships, transports, and Government chartered vessels.

This table will be construed as showing that the British flag is losing place. It is true that it cannot now be said that four-fifths of the traffic is done under our flag, as it was in 1880. The fall in the proportion was only to 77·37 per cent. in 1890. But in 1900 the British proportion had fallen to 56·73 per cent. of the total. There are, however, some obvious explanations of the fact.

1st. Our Government had employed during 1900, in connection with the war in South Africa, from and to the United Kingdom alone no less than 1,571,969 tons of shipping, hardly any of which went *viâ* the canal; a large proportion of this tonnage would have been using the canal, and consequently increasing the British proportion of tonnage for 1900, but for the war.

2nd. It is to be recollected that when it was correct to say that four-fifths of the canal traffic was done by our flag, the other nations had not suitable vessels for that route.

3rd. Further, Germany was a very moderate second to us even in 1890 with only 7·12 per cent. of the traffic, and, still more remarkable, France was third with only 5·31 per cent. Holland was fourth with 3·61 per cent. That state of things was not likely to last. I am not prepared to say that it was desirable that it should last.

4th. Bounties on building and on navigation, and special railway rates, and, as another method of helping the national flag, the payment of the Suez Canal dues on its vessels by at least one flag (as I have already mentioned), have changed the conditions; and, coupled with the employment of so large an amount of tonnage in South Africa, largely explain the reduction in our percentage for 1900. But when it is remembered that the tonnage in the canal trade increased seven-fold between 1870 and 1880; that it more than doubled between 1880 and 1890; and that between 1890 and 1900 it increased 41 per cent., it was inevitable that our percentage in the earlier decades could not continue. I need only add to this that in 1898, the year before the South African war made such demands on our ships, the British tonnage in the Suez Canal traffic was 8,691,093 gross tons, against 7,771,346 gross tons for 1900, compared with German 1,353,161 gross tons in 1898, grown to 2,047,230 gross tons in 1900. The circumstances were quite exceptional. While we were occupied in South Africa and diverted some canal tonnage, Germany sent a considerable amount of tonnage through the canal for its China expedition. Our contribution to that expedition was done mainly from India, and consequently made no mark on the canal returns.

5th. I must add, moreover, that several circumstances have been operating, especially during the latter half of the decade, calculated to reduce our proportion. India has so largely developed her coal production, that she takes comparatively little British coal now. The exports of coal from Calcutta were 137,000 tons in 1891; in 1900 they were 1,737,244 tons. This enormous increase in the output of native coal necessarily lessens the Suez Canal traffic outwards under our flag. In a less degree the same observation may be made regarding salt, supplies of which are now imported into India from various places east of Suez. This means a larger employment of British ships in Indian waters, but less Suez Canal traffic. Owing to bad crops and famines, India had less to export to Europe, which of course tells directly on the canal traffic. Then it would seem that the increased size of steamers is lessening the advantages of the canal route compared with the Cape, so that many liners now prefer the latter for the Australian and New Zealand trades.

The proportion of British, French, German, and Dutch tonnage in the canal traffic throughout the decade is shown in :—

TABLE XXIV.—*Showing the Tonnage of British, German, French, and Dutch Vessels that Passed through the Suez Canal, with their Proportion to the Total Tonnage, for each of the Years* 1890-1900.

	1890.		1891.		1892.		1893.		1894.		1895.		1896.		1897.		1898.		1899.		1900.	
	Gross.	Net.	Gross.	Net.	Gross.	Net.	Gross.	Net.	Gross.	Net.	Gross	Net.	Gross.	Net.	Gross.	Net.	Gross.	Net.	Gross.	Net.	Gross.	Net.
British.																						
Tonnage... 000's omitted	7,438,	5,381,	9,484,	6,837,	8,104,	5,826,	7,977,	5,752,	8,326,	5,996,	8,382,	6,062,	8,057,	5,817,	7,389,	5,319,	8,691,	6,297,	9,046,	6,586,	7,771,	5,605,
Proportion to total tonnage ... Per cnt.	76·3	77·3	77·6	78·6	74·5	75·5	74·2	75·1	73·8	74·6	70·8	71·8	66·9	68·0	66·4	67·3	67·1	68·2	65·5	66·6	56·7	57·6
German.																						
Tonnage... 000's omitted	731,	490,	870,	596,	809,	553,	798,	555,	887,	626,	977,	698,	1,120,	806,	1,194,	858,	1,353,	969,	1,492,	1,070,	2,047,	1,466,
Proportion to total tonnage ... Per cnt.	7·5	7·1	7·1	6·8	7·4	7·1	7·4	7·2	7·9	7·8	8·3	8·2	9·3	9·4	10·7	10·8	10·4	10·5	10·8	10·8	15·0	15·1
French.																						
Tonnage... 000's omitted	555,	365,	616,	407,	635,	415,	702,	461,	710,	467,	1,005,	672,	819,	532,	807,	519,	891,	571,	940,	598,	1,167,	751,
Proportion to total tonnage ... Per cnt.	5·7	5·3	5·0	4·6	5·8	5·3	6·6	6·0	6·3	5·8	8·5	8·0	6·8	6·2	7·3	6·6	6·9	6·2	6·8	6·1	8·5	7·7
Dutch.																						
Tonnage... 000's omitted	341,	248,	369,	268,	433,	319,	443,	327,	484,	356,	497,	365,	520,	360,	532,	382,	526,	381,	583,	418,	704,	506,
Proportion to total tonnage ... Per cnt.	3·5	3·6	3·0	3·0	3·9	4·1	4·1	4·3	4·3	4·4	4·2	4·3	4·3	4·4	4·8	4·8	4·1	4·1	4·2	4·2	5·2	5·2

Note.—The above figures include war ships, transports, and Government chartered vessels.

THE ISTHMIAN CANAL.

My two previous papers alluded to the proposed Panama Canal. I ventured the opinion that after the heavy losses suffered, the European public were not likely to risk further capital in the enterprise. Lately, however, it has become apparent that the United States have come to the conclusion that a canal ought to be made, and that to prevent the development of European interests on the Isthmus, as well as to secure its control in time of war, the United States ought to make it. Our interest is in favour of the canal being made, and it seems likely that the United States will give us proper securities for its neutrality during war, and its use on common terms to all flags during peace. I hope the obstacles arising out of the Clayton-Bulwer Treaty will be extinguished by friendly arrangement between the two Governments.

BOUNTIES AND SUBSIDIES.

On this subject, the Society's *Journal* for September contained a paper so full of interesting information by our esteemed Secretary, that I do not think it needful to say much, except to refer all who desire information thereon to that paper. In addition, I may refer to a paper presented to Parliament in June, 1901 (Commercial No. 4, 1901), respecting bounties on ship building, &c., in Austria, France, Germany, Italy, Russia, and other countries.

It is uncertain while I write whether the United States Government will decide to make an effort by subsidies to improve its position in the over-sea trade. A large party in America favour the policy of subsidies as a means of accomplishing that end. But it would not suit us to have our food carried in subsidised American ships to the exclusion of our own flag. It is enough that it should be grown abroad. If we are to be excluded from its carriage, we should have to inquire what alternatives the "resources of civilisation" have left to us. Tariffs have greatly restricted our exports to the United States, so that for the most part our vessels have to go there empty; we could not be indifferent to the exclusion of our ships from grain carriage merely because vessels with large bounties could carry cheaper. It is hardly possible to see how such trade could be regarded as either free or fair. Many things, however, are likely to happen to prevent such a catastrophe.

It is strange to see so many liners subsidised to run to British ports, such as Bombay, Calcutta, Singapore, Hong Kong, and

Australian ports. Against other flags than ours in these ports, in open competition, nothing can be said; but it will be very regrettable should it become necessary to levy duties on such subsidised flags equal to their bounties should the practice go much further. A bounty is only another form of a discriminating duty against us when it relates to trade in British ports, and of course that is a game at which two can play. I hope nothing of the kind may become necessary, and it certainly is not necessary yet.

France, I think, led the way in this system of bounties, and so far as appears she has not gained much by it. Between 1890 and 1900 French imports and exports increased only 12 million £ sterling, from 327 to 339 million £. That is a poor result seeing that the French Government paid during the ten years 1891-1900 in bounties for construction and navigation nearly 5¼ million £ sterling, in addition to over 10 million £ sterling in subventions for postal services. It is also significant that the total entries and clearances of French shipping at French ports in 1890 was 9,254,879 tons, and in 1899 only 10,137,277 tons; and that the percentage of tonnage entered and cleared under the French flag in French ports fell from 31·9 in 1890 to 28·4 in 1899. The total tonnage of the French mercantile marine is given at 932,735 for 1889, and 957,755 for 1899. These cannot be regarded as encouraging facts for States which are contemplating the adoption of the bounty system against us.

The German bounties cannot be easily stated. They are not limited to payments for postal services, nor to money grants; they include some tariff questions and preferences on railway rates which practically exclude foreign vessels from certain kinds of business. They were avowedly adopted not merely as the value of the postal service, but as value paid for "important interests of "the German export industry, the requirements of the navy, and "of colonial policy." The increase in the total tonnage of Germany is only from 1,320,721 in 1889 to 1,639,552 in 1898, but the proportion of steamers in this quantity is not stated. It has probably largely increased. It is without doubt true to say that, without subsidies, the German lines to East Africa and to our Australian ports could not have been run. Mr. Consul-General Ward ends his report, published in the Parliamentary paper already referred to, by saying that owing to the impossibility of procuring further statistics than he sends, he is not able to furnish the same in a more complete form, but that the figures which he has sent will sufficiently prove that "the direct and indirect "bounties granted by the State to the several German steamer "lines above referred to have been of very valuable use towards "developing German trade with the Levant, East Africa, Australia, "and the Far East."

I only mention, as regards Japan, that the amount paid for bounties in 1890 was 153,563*l.* sterling, and that it increased by 1899 to 584,696*l.*

CONCLUSION.

In concluding this paper I think I am justified in saying that our investigation has revealed no signs of decadence. We have passed through great changes; from wooden to iron and steel ships; from sail to steam; from small to large and much larger vessels; and the figures I have submitted indicate health, strength, and ever increasing efficiency.

There are two points relating to shipping which I wish specially to emphasise. The first relates to coal supplies; the second to food supplies—the first essential equally to our naval and to our mercantile fleet; the second essential to our very existence as a nation of forty millions inhabiting a group of islands on the western verge of the European Continent.

As to Coal Supplies.—It is more than satisfactory that we are not now solely dependent on our own coal measures. The mineral is being worked in constantly increasing quantities in other parts of our Empire, notably in Canada, in Australia, in India, in Natal, and in Borneo. It is also being worked in France, Belgium, Germany, Spain, and Russia. It is believed that the United States is raising nearly as much coal as we do. Eastwards of the Red Sea it may be said that the bulk of the coal consumed is either Indian or Japanese, and there is every reason for believing that in a short time supplies of excellent China coal will be available. It is consequently reasonable to conclude that the supplies of this essential commodity will not fail such nations as have the means for its cheap carriage by sea. It is perhaps even more reasonable still to expect, that before the new century is much older, more economic methods of using coal will reward the eager scientific research now being pursued by the engineers of all countries. Moreover, the use of petroleum for sea-propulsion seems to be on the eve of large development; and, lastly, when electric power has got fairly into use on land, it is quite possible that means will be devised for its use at sea. The vain attempts recently made to keep coal far above its normal value in the United Kingdom can only demonstrate their futility by hastening all these attempts to find substitutes for it and to economise its use. Whether, therefore, one thinks of coal as a factor in shipping or in national defence, I venture to submit that there are no grounds for pessimistic fears, whatever reasons there may be for watchfulness—sometimes even for anxiety.

As to Food Supplies.—I may be permitted to point out how greatly the importance of the tonnage question has changed since my earlier papers. The tonnage question was then thought chiefly to concern shipbuilders and shipowners, underwriters and seamen. The public took very little interest in it. It is quite otherwise now. The public is at last waking up to the fact that the tonnage question relates vitally to our supplies of food. It is only dawning on the public mind and imagination what is meant by four out of every five loaves which come to our tables being absolutely dependent on sea-carriage. No doubt we are defended by the navy, but we are fed by the mercantile fleet. Any failure of the latter would soon develop a state of things which the most powerful navy could not prevent. In this way the questions of national defence, of coal, and food supply have become inextricably mixed; the tonnage question is therefore not less but more important than it ever was. Of course the question of food comes first, for unless the people are fed, what would there be to defend? The most magnificent fleet at sea would not keep a starving population quiet. May I ask, therefore, whether any one thinks it *a safe arrangement* to be dependent on foreign-grown wheat and sea-communications for the daily bread of four-fifths of our population? Ought our rulers to be satisfied with such a degree of dependence? Is it possible that the only answer of statesmanship to such a problem is—*Laissez-faire?* The stake is too big! No doubt Votes, and Education, and Housing, and other things are important, but compared with food, with daily bread, and the terrible risks of its absence, or its insufficient supply, even these things are insignificant. Our present position is the direct result of laws wisely enacted in totally different circumstances—laws, moreover, which answered the nation's purpose at the time, though they failed to accomplish the glowing pictures of prosperity to our own agriculture with which they were heralded. Our wheat production has declined one-half since those laws were enacted, while our consumption has doubled. Do not all these circumstances indicate that the time has come for their reconsideration? "New occasions make new duties"—even our own territories, instead of sending us a larger proportion of wheat than in the previous decade, are sending us less. Surely our interest must lie in some policy which would largely increase the contribution of our own territories, so that we may not aggravate the risks of sea communications by depending to such an increasing extent on foreign nations being willing to sell. I hope those who record the next series of tonnage decades, may be able to point out that the facts I have mentioned took such possession of the British people and of their Parliament, that they decided to make the Old Country and her Colonies and dependencies more useful to each other in this matter of food supplies, and took the necessary measures to secure that end in time. We have the ships to carry the wheat, and we have the navy to protect its transit—but I submit it ought to be a prime object of English policy, to lessen our dependence for daily bread on those who either might properly want the corn themselves, or be reluctant sellers to us in case of war.

DISCUSSION *on* SIR JOHN GLOVER'S PAPER.

SIR FRANCIS S. POWELL, Bart., M.P., referring to the remarks in which the author deprecated the pessimistic spirit which was so much abroad at the present time, said that, so far as the existence of a pessimistic spirit led to exertion, he thought it was a wholesome sign, but exertion was not always wise, and changes made under the influence of that spirit might increase the very evils which they were intended to remove. It was most gratifying to hear of the great advance which had been made in our mercantile marine. The changes which had taken place, so far from having been a terror to the builders and owners of ships, had been an encouragement, and that encouragement had been followed by success. That circumstance was one which ought to lead them to new hopes. Complaints were constantly being made in the reports of foreign consuls,—in which there was a good deal of information of a valuable character,—as to the inflexibility of the leaders of British industry, who seemed to be unable to adapt themselves to new conditions, and showed a want of appreciation of the circumstance which indicated the necessity of change. It was quite clear, however, from Sir John Glover's paper, that that apathy and inaptitude did not attach to the owners of our mercantile marine, and he thought that to every Englishman who was proud of England's position amongst the nations of the earth as Mistress of the Seas, it must be gratifying to find in the rigid and scientific and careful investigation of so high an authority as Sir John Glover, evidence that should lead them on to new hopes,—those hopes being justified by the encouragement and experience of no less than fifty years.

Mr. T. V. S. ANGIER called attention to a deficiency that had struck him, and rather surprised him, viz., that Sir John, having shown how much our people depended on this great mercantile fleet for their food, had made no mention of the food of the ships themselves, *i.e.*, freights. The history of freights during all these decades was very interesting. It illuminated many subjects which vitally affected the progress of the fleet, as freights were the entire food, so to speak, on which the ships existed. They would not have seen these enormous increases if they had not had occupation for the ships, or, in other words, freights for them to earn; and in his opinion an important statistical paper might be written tracing the history of the freights by which the ships lived. He had been a very careful follower in Sir John Glover's footsteps, and had gathered, from somewhere about the year 1834, a correct and reliable history of the subject.

Mr. EVELYN CECIL, M.P., remarked that, owing to his position as Chairman of the House of Commons Committee on Shipping Subsidies, he could not express an opinion as to what ought to be done, but he might mention one or two facts which had either come out in the evidence, or which the evidence had suggested to him as bearing upon this most interesting paper. One of the facts which he did not think had been mentioned was, that Germany, at any rate, and possibly some other countries, had been building large merchant vessels, running at a speed far exceeding that of any vessels we possessed. He referred more particularly to the "Deutschland," which he believed steamed at 23 knots, and he believed that the "Kaiser Wilhelm der Zweite" and the "Kronprinz Wilhelm" steamed at about the same speed. So far as the evidence adduced before the Select Committee went, the average speed of English fast vessels was about 18 knots. This of course raised a further question as to whether, if we were at war, we should not be very seriously handicapped, in the first place, by the operations of fast merchant vessels belonging to foreigners, and, in the second place, by not being able to commandeer, if he might so express it, merchant vessels of our own which could run at as great a speed as the foreign vessels. He noticed also that it was suggested in the paper that the German Government gave a sympathetic patronage and assistance to the mercantile marine, and that efforts in a maritime direction appeared to be more appreciated by some Governments than by others. The German Emperor took a very active interest in the mercantile marine, which his position in the country enabled him to do. It was difficult therefore to draw a precise parallel between Germany and ourselves. Another matter mentioned in the paper was the employment of Asiatics. If large vessels were to be manned entirely by Asiatic crews in time of war, some difficulty might arise. In the German contracts with their subsidised steamship companies there was an article inserted to insure that the large majority, and, as far as possible, the whole of the crew, should be native Germans. For ships trading to the tropics it was no doubt necessary to make an exception as regarded the stokers and people employed in the engine rooms. He felt much freer to touch upon the question of our food supply in time of war. It was probably true that four-fifths of the population were dependent upon foreign wheat for their food; but while they were all aware of that, the remedy was never made so clear. It was often stated that statesmen ought to grapple with the problem more thoroughly, but what precisely was intended by that statement was always somewhat vague. If it was intended that our wheat supplies should be hoarded up, after all, they could not be hoarded up indefinitely. He understood Sir John to suggest that they should try to get the Colonies to grow more wheat, and that was perhaps the most practical form that the suggestion could take. There was a district in the new Orange River Colony, on the borders of Basutoland, which was by all accounts very well adapted to the growing of wheat. And he had no doubt there were Colonies in other parts of the world which might be persuaded in some degree to assist the mother country by growing more wheat; but if these Colonies found it more suitable to grow something else, or that it was not worth their while to compete with Russia in shipping food to England, he very much doubted whether they would do it. Possibly, owing to his inability to grasp the question, he did feel some difficulty in understanding what was the remedy they were to set themselves to establish. In conclusion, he observed that, closely connected with the history of freights, was the question of shipping conferences or rings, and their effect upon the mercantile marine, which he thought might well be considered in connection with this subject.

Mr. E. R. P. **Moon**, M.P., referred to the point which the author had raised in relation to our food supply. He failed to understand what was the precise remedy contemplated by the author, for the difficulties and dangers which he recognised and deplored. To send the people back to the land—if that were practical—would be equally desirable, as well for the *physique* of the race as for the purpose of increasing our home-grown food supplies. Speaking as a member of the Navy League, he felt that this was an additional reason for the maintenance of a navy on which they could place absolute reliance, since it was desirable to leave these economic questions to work themselves out in their own way, for it had been found that interference with them always caused unexpected and serious dislocations. In conclusion, he asked how[1] it was that in Table XX the number of foreign seamen in the mercantile marine was given at 36,000, whereas a little further on in the paper the number was given as 70,000.

Mr. R. H. **Hooker** noticed that the imports in Table II were the sum of the imports of wheat and wheat flour. Although this was correct from the point of view of tonnage statistics, since from that standpoint they wanted to know the weight actually carried, he thought it would be better, when the author spoke of the food supply, to convert the flour into its equivalent of wheat before making the addition. The proportion coming to this country in the form of flour had considerably increased of late years, so that the supply of foreign wheat, expressed as grain, had grown more than the author showed.

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[1] The alteration in the heading of Table XX here suggested has now been carried out.—**Ed.**

Mr. Hooker's main object in rising was to call attention to the desirability of the use of statistics of "ton-miles," or as Sir Alfred Bateman had expressed it, the "carrying energy" of our ships. During the past half century there had of course been a great increase in the average distance travelled by ships, and a calculation of the ton-mileage performed would show a much larger growth in the work done than was indicated by statistics of the actual tonnage. The carrying energy might, he thought, be obtained with a fair degree of accuracy by multiplying the tonnage from each country by the average distance of the principal ports concerned. He had had the curiosity to see whether the data given by Sir John Glover could not be made to yield a very rough "first approximation" of the change in average distance travelled between 1860 and 1900, by considering the quantity of goods imported as a function solely of the tonnage, distance, and speed (or rather efficiency). A rough estimate of the quantities imported might be obtained by correcting the value of our total trade by Mr. Sauerbeck's index numbers. As regards increase in efficiency, the author spoke of one ton of steam as being equivalent to three tons of sail. Since 1860 most of our tonnage had changed from sail to steam, and he would therefore assume the efficiency to be now three times as great as in that year. On these assumptions it would appear that the average distance from which our imports now came was something like four times what it was in 1860. Of course numerous other considerations ought to be taken into account in such a calculation;—for instance, no allowance had been made for increase in speed (on the other hand the proportion of sailing vessels is still appreciable)—but these remarks would serve as a sketch of a method which might be followed. Such a method might perhaps be termed "juggling with figures," but it would be interesting to ascertain whether the more accurate method of calculating the ton-mileage indicated above would yield a figure anything like this.

He wished to ask the author also whether similar considerations could be held to affect the number of foreigners employed in British vessels. He had seen it stated that Norwegians especially were frequently taken on for short voyages between England and Norway, and that there was a constant change in the crews of such vessels. Many foreigners would thus be recorded several times in the course of a year, so that if he were correct in his surmise a record of "man-miles," analogous to a record of "ton-miles," might show the British element as a somewhat larger percentage than appeared from the statistics at present available as to the number of seamen.

The PRESIDENT expressed the great interest with which they had listened to this important and valuable paper. It was, he believed, the first time in the annals of the Society, or of any other, that it had fallen to any one to record the history of his own business for fifty years, yet, seeing their friend so hearty and so vigorous, he thought they would hope that they might have the great pleasure of having another paper by him ten years hence. Sir John had pointed out some facts which might well induce their friends over the water, who were endeavouring artificially to stimulate their shipping industry by grants and bounties, to consider how very little good they effected by these attempts, and how very expensive they were to their own people. For his own part he must confess he would be very glad to see such regulations, for instance, as prevailed in the trade between France and Algiers and in other parts of the world, done away with, and he thought Parliament might very well consider whether some friendly remonstrances might not be addressed to foreign countries with reference to prohibitions which were, he believed, of no advantage to the countries adopting them, and which were certainly injurious to the rest of the world. Sir John had pointed out that the history of the past ten years showed no signs of decadence or falling off so far as our trade and commerce were concerned, or at any rate so far as regarded the great interest with which his name was so intimately associated. With reference to the latter part of the paper, his difficulties had been very much the same as those of Mr. Cecil and Mr. Moon. He quite felt the gravity of the facts Sir John Glover had mentioned. We had a population which it was impossible to feed upon the produce of these islands, but he had derived some consolation from the fact that the great wheat-growing countries of the world were not likely ever to be united against us. There was safety perhaps in the number of quarters from which our supplies came. As to storing up quantities of food, his little knowledge of natural history rather induced him to entertain grave doubts whether large stocks could be stored for any length of time. He understood that Sir John Glover's suggestion did not lie in that direction. Sir John would, perhaps, in the interests of statesmen and members of Parliament, make some suggestions as to the direction in which he would like them to carry out his views, and perhaps on a future occasion he might develop that most interesting subject.

Sir JOHN GLOVER (in reply) referred to Sir Francis Powell's remark that pessimistic ideas were sometimes beneficial, and said that in his opinion that depended a good deal on the quantity. He urged that the moral was that they should beware of percentages unless they knew something of the figures on which they were founded. He considered Mr. Angier's suggestion as to the inclusion of a history of freights in the history of tonnage was valuable, and he hoped Mr. Angier would contribute a paper on freights. If he might be allowed to differ from Mr. Cecil, he would say that shipping rings were rather outside this subject. Reference had been made to the high speed of German boats; but he had no doubt Mr. Cecil was fully aware that if it suited us to build boats to go at 25 knots, it was quite within our skill and competence to do it; there was no difficulty whatever about it if the shipowners got a sufficient subsidy. If the English Government thought that such vessels would be an advantage to the nation, and would guarantee say 5 per cent. interest on the cost of a 25-knot fleet, they could have it as soon as it could be built. By payment of a subsidy of that sort they could have the call on these steamers whenever they were wanted, either for cruisers or for any other purpose. If other States in an earlier condition of development thought it was to their interest to do that, they should not blame the Englishman who thought that 20-knot boats paid better and cost less. But our fast boats on the Atlantic now went at 22 knots in case of need. Possibly Mr. Cecil did not know how extremely moderate the subsidies to English mail lines were. He very much sympathised with Mr. Moon's observation about the people going back to the land, and he could not conceive of anything more foolish than for a growing nation like this to allow its wheat crops to be diminished. He thought he would speak with the approval of every one present when he said that there was not a single statesman who was concerned with our Free Trade policy, who had ever contemplated such a condition of the food question as that into which we had now drifted. The opinions of Sir Robert Peel on that subject were disclosed in his memoirs. He predicted as the result of a free trade policy that there would be a great increase in the value of land, and that the position of the agriculturist would be greatly improved. He (the speaker) wished these things had come true, but they had not. With reference to the observations of Mr. Hooker, he had only to say that for freight and tonnage purposes there was no difference between wheat and flour. For some purposes, with which Mr. Hooker was familiar, there were differences, but for tonnage purposes there was no difference. He rightly surmised that Norwegians and Scandinavians made shorter voyages, and consequently many records in each return, while English ships to a far larger extent made long voyages, and did not so frequently return to this country, so that they performed a great deal of work which did not appear in the returns. A great proportion of the work of the world done by British ships was not recorded in our returns, though what was shown in the returns was good enough.

A hearty vote of thanks to Sir John Glover for his paper was then proposed by the President, and carried unanimously.

A FINANCIAL RETROSPECT, 1861-1901.

By SIR ROBERT GIFFEN, K.C.B., F.R.S.

[Read before the Royal Statistical Society, 18th March, 1902.
The Right Hon. LORD AVEBURY, President, in the Chair.]

Introductory.

IN consequence of certain letters of mine which appeared lately in "The Times," on the "Financial Outlook,"[1] some of my friends on the Council of this Society were good enough to suggest that a short statistical paper, resuming the figures for the last forty years —the past period covered by the letters,—would be useful to the Society by way of record, and would allow of Members discussing from the financial point of view the topics of economic development and national progress, which have so frequently been the subject of debate at our meetings. In a moment of weakness, I fear, the suggestion was accepted, and the present paper is the result. Accidentally as the suggestion has been made, there is a good reason of substance for making 1861 the starting point of such a retrospect. In that year the Free Trade work of Sir R. Peel and Mr. Gladstone had been practically completed. The last great clearance of the tariff, consequent on the Cobden Treaty of 1860, had just been made; the great struggle respecting the paper duty had just been finished; and our tax system was free of any duties for the purpose of protection, if we except a small timber duty, and the registration duty of a shilling per quarter on the import of corn, which were exceptions of a formal, and not of a material, kind. The disturbance of our financial arrangements caused by the Crimean War had also ceased to leave its mark, or nearly so, by 1861. What we have to observe then is the development actually taken by our finance under a Free Trade *régime* all through, and in general circumstances of great material prosperity.

The tables which have been prepared, it will be found, are extremely simple in form. Nothing more has been done than to put together, from the Statistical Abstract mainly, the figures of actual revenue and expenditure and other financial data for a particular year, at intervals of ten years, since the beginning of the period, adding in some cases the estimate for 1901-02, so as to make the comparison more up to date. In a more elaborate study the figures for each year should have been inserted, and averages for groups of years stated; but the present arrangement is simpler and less confusing, while if error arises occasionally, in consequence of the single year in some cases not corresponding with the average at the period to which it belongs, a reference to the very familiar Statistical Abstract can easily be made. But no great error, I believe, arises in this way, although in one case, 1871, the figure of expenditure is rather understated, the total being lower than it would have been if any other one of several years before and after had been selected. The changes, however, between the earlier and the later years are so great that not much turns on the excess or diminution of any particular year compared with the average. In addition to the financial tables proper, supplementary tables are added for convenience of reference, dealing with the factors of population, production and consumption, which are obviously matters requiring consideration in any study of financial questions. It is not proposed, however, to give a formal account of these tables as is done for the financial tables themselves.

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[1] See the "Times" of 7th, 9th, and 10th January, 1902.

The General Growth of Expenditure.

Taking the tables in their order, I begin by noticing Tables I to IV, dealing first with the revenue and expenditure of the Imperial Government of the United Kingdom, in the gross, and then specially with the expenditure. The lesson of the first table is striking. Expenditure increases from 72·8 million £ in 1861 and 69·5 million £ in 1871, to 80·9 million £ in 1881, 87·7 million £ in 1891, and then in 1901 to 183·6 million £, which is exceeded by the estimates of the current year. Revenue increases in much the same way, lagging a little behind in the last period of all. The figures are 70 million £ in each of the years 1861 and 1871, 82 million £ in 1881, 89·5 million £ in 1891, and 130·4 million £ in 1901, and finally 142·5 million £, estimated in the current financial year. The change from the earlier period is most striking, and practically it has come with a rush in the latest period of all, that is since 1891. The explanation on the surface is that the recent growth is mainly due to the war in South Africa. The sum of nearly 70 million £ is put down for war expenditure in South Africa and in China in 1901, only a small part being for China. But in a general retrospect such as the present, too great stress must not be laid on such explanations. The present period is obviously different from the past, whatever may be the cause. Possibly it may be found after a few years that the figure of 180 to 190 million £ exceeds the normal expenditure of the period into which we have come; but as prudent men we must accept the warning for the present, and not fix upon a much less figure than what has actually lasted for nearly three years, say a less figure than 150 million £, until there is experience of the reduction.

This is not the whole account of the growth of expenditure. Appended to Table I is an account of the revenue received by the Imperial Government, and handed over by them to the local authorities of the country without appearing in the ordinary budget at all. This was an arrangement commencing about 1887, when some services hitherto charged on the Imperial Budget were handed over to the local authorities along with certain revenues. Clearly in a fair comparison with a former period the expenditure on such services ought still to be shown. The total money thus collected for the local authorities and handed over to them now amounts however to close upon 10 million £, which the Imperial Government really pays, although it is not seen in the ordinary budget In putting the current expenditure at a very high figure, therefore, compared with 1861 and 1871, and disregarding a good deal the special explanation of war, we are acting safely. There must be a very high figure when normal conditions are established.

Before analysing the growth of expenditure and revenue in detail, we may inquire generally as to the relation of the new burden to the resources of the country. The first table shows that the aggregate expenditure per head of population, after falling from 2*l.* 10*s.* 8*d.* in 1861 to 2*l.* 4*s.* 3*d.* in 1871, and then rising slightly to 2*l.* 6*s.* 4*d.* and 2*l.* 6*s.* 6*d.* in 1881 and 1891, has all at once jumped up to 4*l.* 8*s.* 6*d.* and 4*l.* 12*s.* 2*d.* per head, not including the extra 10 million £ of expenditure which has dropped out of the Imperial Budget. A natural presumption from these figures would seem to be that the national resources are more severely drawn on than they were, as is undoubtedly the case when we make comparison with a recent date, such as 1891. The matter will be discussed more fully afterwards; but it may be useful to point out, even at this early stage, that the maintenance of a low figure of expenditure per head for so long a period as from 1861 to 1891 itself implies an enormous reduction of the burden of Government in proportion to the resources of the people. The period, as we all know, was one of great and continuous prosperity, the wealth of the community increasing fast. It is quite possible, therefore, that with 2*l.* 6*s.* 6*d.* per head in 1891, the people were much less burdened than with 2*l.* 10*s.* 8*d.* per head in 1861, and that they would be no more burdened now than they were formerly, even if there should be a considerable increase in the expenditure per head. The point is one for investigation and not for assumption on any side. That there has been an enormous increase of wealth is however obvious from two sets of facts, which are corroborated by many others. First, there has been an enormous increase in the consumption of such articles as tea and sugar,—in the former case from 2·69 lbs. per head in 1861 to 6·11 lbs. per head in 1900, and in the latter from 35½ lbs. to 88 lbs. per head (see supplementary tables), increases which would have been impossible without a material improvement in the well-being of the masses. Next there has been an enormous increase of the yield of a penny of the income tax, from 1,100,000*l.* in 1861 to 2,400,000*l.* at the present time (see Table IX), although in the interval the lower limit of the tax has been raised from 100*l.* to 160*l.*, and the limit up to which abatements are given has been raised from 150*l.* to 700*l.* It cannot be assumed then that the country is now burdened more in proportion to its resources by the expenditure of the present time than it was by the expenditure of 70 million £ in 1861. Both sides of the account have to be looked at, and not one only.

The growth of expenditure about 1861, it may be interesting to note, was discussed at the time just as the expenditure of the present day is being discussed in some quarters. On 3rd June, 1862, Mr. Stansfeld moved a resolution of protest against growing expenditure, and was strongly supported, Mr. Disraeli dwelling on "bloated armaments," while Cobden and other authorities joined in the onslaught. There was, however, no real discussion of what the expenditure of the State should be and for what purposes, and of what could really be borne by the community, any more than there is now or ever has been at any time in my recollection. The nearest approach to comparisons of that kind was made by Mr. Stansfeld, who described the expenditure of 70 million £ as equal to a tax of 6*s.* in the £ on the income tax income of the country, and who said that this, at 1*l.* per week per family, would be equal to the maintenance of seven million persons of the working classes for a year. Six shillings per £ on the income tax at 2,400,000*l.* per penny, the present rate of yield, would give an expenditure of no less than 173 million £, which approaches the figure of the present time, while the proportion of the working classes that could be maintained for that sum, owing to the increased income of the class, now far more on the average than 1*l.* per week per family, would be diminished and not increased. Such comparisons, however, are hardly to be encouraged, as the expenditure for Government is necessarily the first charge upon the resources of every community, and if it has to be met, no help is given in its proper administration by showing that, as with Mrs. Caudle's 5*l.*, something else could be done with the money.

Analysis of Increased Expenditure and Revenue.

Analysing the expenditure in detail, we may notice the following points:—

1. The annual charge for the debt (Table II) appears to have considerably diminished. The figure is 26·3 million £ in the budget of 1861, and in the estimate for 1902 it is 21·6 million £. This is subject to the observation, of course, that the annual charge in 1861 included a considerable sum for the reduction of debt, while the annual charge at the present time does not, but there is clearly no question that the annual charge, apart from repayment of debt, has rather diminished. The capital has diminished, there has been some reduction of interest by conversion, and there will shortly be a further reduction of interest of the same kind to be set against the actual increase of debt during the last few years.

2. The Civil Service expenditure of a miscellaneous kind accounts for very little of the large growth of expenditure with which we have been dealing (Table IV). The Financial Abstract now shows in a line the whole of the expenditure for civil government, including the Civil Service estimates and the charges on the Consolidated Fund, apart from the debt charge, but excluding the charges for the collection of revenue and for the Post Office. The figure of this expenditure last year was 24,854,000*l.*, and if we carry it back, we find that the corresponding figure in 1861 was 9,659,000*l.* This is a considerable increase, nearly 15,000,000*l.*, but on further analysis we find that the increase in the education charge alone was from 1,097,000*l.* to 12,662,000*l.*, or nearly 12 million £ of the total, and that the miscellaneous Civil Service expenditure—the general charge for the civil government of the country—has only increased from 6,266,000*l.* to 10,623,000*l.*, or, including Consolidated Fund charges, from 8,562,000*l.* to 12,192,000*l.*, or about 3½ million £. This is again subject to the observation above made as to services transferred to local authorities, and to some doubts as to the manipulation of the estimates, by which the expenditure is partly concealed; but, making all allowance for such observations, the facts appear to show that a common impression as to the formidable growth of Civil Service expenditure, on which about fifteen years ago Lord Randolph Churchill thought he could save 10 million £, is hardly well founded. Lord Randolph Churchill, in fact, sacrificed his career for a pure blunder.

3. The growth of education expenditure in particular, to which attention has been drawn, is an undoubted makeweight in the present position.

4. The charge for collection of the revenue, apart from the Post Office, like the Civil Service expenditure generally, has remained comparatively stationary, being 2,834,000*l.* now, as compared with 2,569,000*l.* in 1861. In other words, Customs and Inland Revenue, though we collect double the revenue, cost hardly more now than they did in 1861.

5. The largest increase in civil expenditure, besides education, is in the Post Office department, where the expenditure has risen from about 3 million £ in 1861, to 13½ million £ in 1901. This is expenditure, as is well known, which is accompanied by a corresponding growth of revenue, and implies a corresponding increase of services rendered to the country. Even if it grows, therefore, out of proportion to the growth of population and income, it is a beneficial expenditure, and need be viewed without concern, although it may involve an increase of the charge per head of population.

6. We come finally to the real question involved in the growth of expenditure, viz., the growth of charges for Army and Navy. It is these charges, including the charges for actual war, which account mainly for the whole growth between 1861 and 1901. The increase in Army and Navy (see Table III) is in fact 90 million £, if we compare 1861 with the present time, viz., from just over 31 million £ to just over 121 million £, and it is no less than 100 million £ if we compare 1871 with the present time, viz., from 22½ million £ to just over 121 million £. There appears indeed to have been a decided falling off in the charge for the Navy, especially between 1861 and 1871, so that 1871, as already mentioned, becomes an exceptionally low year to start from. What will surprise some of us is that Army and Navy were kept under, as they appear to have been, down to as late a date as 1891, so that then as compared with 1871 they show no greater an increase than about 10 million £.

There is, unfortunately, no doubt about the increase of 100 million £, or thereabouts, since 1871. We are spending over 121 million £, where we spent just over 22 million £ in 1871. Of this increase, as already suggested regarding the growth of expenditure generally, a large part must be really permanent, but the point should be specially considered, as a certain part of the general growth of expenditure, viz., the expenditure for education, and for Post Office, which is also in all probability permanent, is in an entirely different category from expenditure on armaments. We should disregard then, I believe, the classification of 70 million £ of this army and navy expenditure as being for "war," and impliedly, therefore, temporary. The question is one of opinion, and I should deprecate a very full discussion here, as involving questions of politics; but the overruling facts appear to be that a war expenditure for two years amounting to about 70 million £ a year, followed by an estimate of 40 million £ for the next year, must be held to indicate a situation of a chronic character, implying expenditure of a similar nature for some years to come. The expenditure, in fact, is not so much for war as for the more or less permanent occupation of a difficult country, which unavoidable circumstances, I for one should admit, compel us to occupy, where there are good reasons also for believing the burden will diminish, and diminish greatly, in time, but where improvement is conditional on our facing the evil at its worst. What we have really to face then on account of South Africa is a costly army of occupation, with corresponding charges for an army at home to send reliefs to it as we now send reliefs to India and our other colonial possessions. As to Army and Navy generally, also, the international position appears to be such that for some years to come the British Empire must exhibit a great and unwonted development of force. The reason is that we are surrounded as we never were before by great military powers who possess powerful and increasing navies; that we have extensive land frontiers in all parts of the globe, with active enemies near them, especially in Asia and Africa, such as we never had before; and that our staying power, if we are checked, owing to our absolute dependence on sea communications for needful raw material as well as food, and for the sale of the productions by which our people live, may be unexpectedly curtailed. Hence we must make preparations for eventualities, not only as if we were one of the unfortunate continental States who are perpetually in terror of the spectre of invasion, and whose case we have been accustomed to lament from our superior position as girt by the inviolate sea; but we must prepare as if we were exposed to even greater dangers than any continental neighbour. Our whole position has been revolutionised internationally, and as like causes produce like effects, we must go through the experience in the way of military preparation which our continental neighbours have gone through.

The only question is as to the exact figure at which the permanent increase of Army and Navy expenditure should be put. It will probably be something less than the 121 million £ at which it now stands, comprising one-half for ordinary Army and Navy expenditure and one-half for so called war. The estimates for next year provide for about 100 million £ only. But take it as a rough guide that every 100,000 men of regular army and navy, allowing for increased pay, must cost about 13 million £ a year, and that new ships and repairs, merely to keep our fleet going, must cost about 15 million £ annually, we can easily calculate what large sums must be spent. Mr. Brodrick estimates the regular army, including India, at 250,000 men, but this omits South Africa, and with South Africa the numbers will certainly not be less than 300,000, omitting India altogether. At the rate of 13 million £ for each 100,000 men, this will mean an expenditure for army alone of nearly 40 million £, apart from charges for auxiliary forces and the like. The navy, again, has nearly 130,000 men, involving at the above rate a charge for the *personnel* of about 17 million £, besides 15 million £ for repairs and renewals of the *matériel*, and charges for fortified coal depôts, &c., let alone an increase of the fleet to keep pace with foreign fleets—total over 40 million £. As I have often insisted, therefore, I see no way by which, in fact, charges of 40 million £ each for Army and Navy are to be avoided in future, and practically we may consider ourselves fortunate if the charge should ever again be less than about 100 million £ in all.

These are very different figures indeed from the 20 to 30 millions which were the occasion of the lively debates of forty years ago. But we have travelled far from that time, and that is all that can be said.

Analysis of Growth of Revenue.

Analysing the growth of revenue in detail, we may notice the following points:—

1. No part of the increase of revenue since 1861 can be ascribed to the imposition of new taxes or the increase of existing taxes. The increase in all, comparing 1901 with 1861, is from 70 million £ to 130 million £; but the whole of this extra 60 million £ is due exclusively to the larger yield of existing taxation, and not to any new burdens. This appears clearly from Table XIII in the appendix, summarising the well-known table in the Statistical Abstract, which gives the taxes repealed or reduced, and imposed or increased in each year, with the estimated loss or gain to the exchequer in a complete year, and other particulars. There have been many ups and downs in the tax list in the interval, but finally the reductions all told amount to 71 million £, and the increases to 62·6 million £, leaving a net reduction of 8·4 £, which ought to be added to the increase of revenue above stated to show what the real growth has been. The growth must have been even larger. A reduction or increase of the same rate of tax, when revenue is growing rapidly, is necessarily represented by a smaller amount of taxation in an earlier than in a later period. When reductions take place, therefore, in the earlier part of the

period over which the comparison extends, and increases in the latter part, the comparison of the amounts of taxation affected does not quite show the real reduction that has taken place, but it shows a figure that may be a good deal less. In the last ten years there is an increase of taxation of no less than 19,500,000*l.* on balance, but the same changes of taxes in the first ten years of the period would have come to a good deal less money, and it is this amount which should be compared with the early reductions, so as to show what the real growth of revenue has been.

If we made the comparison with the estimates of the current year the result would be much the same. We should have to add about 11 million £ for the increased taxes in last budget, thereby showing a small increase of taxation on balance to be deducted from the apparent growth of revenue from 70 million £ in 1861 to 142½ million £ in the current year. But this apparent increase, according to the explanation above given, would be far more than the real increase, and on balance there would be no such increase. We are quite within the mark in saying that the doubling of the revenue since 1861 has been effected without any increase of taxes on balance, but rather along with a decrease.[2]

2. The second point which is obvious on the surface of the tables is the fact of a great change in the relative importance of different branches of the revenue in the total product. A glance at Table V shows that, while Customs in forty years have increased from 23·3 million £ to 26·3 million £, or about 15 per cent.; Excise from 19·4 million £ to 33·1 million £, or 70 per cent.; and Stamps (excluding death duties) from 4·9 million £ to 7·8 million £, or 57 per cent.; we find income tax increasing from 10·9 million £ to 26·9 million £, or nearly 150 per cent.; death duties from 3·4 million £ to 13 million £, or 286 per cent.; and Post Office charges from 3·4 million £ to 17·3 million £, or over 400 per cent. If the current year were taken into account these contrasts would be still as marked. Certain additions have been made to Customs and Excise, so that they exhibit a larger percentage of increase than was the case a year ago; but income tax has also been added to, and the comparison shows up much the same. Leaving aside the Post Office, where the charges stand by themselves as being largely charges for services rendered, and not bare taxation, we may say broadly that, during the last forty years, income tax and death duties have largely increased in relative importance among the different branches of revenue, and Customs and Excise and Stamps have declined.

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[2] No difference would be made in this conclusion by including the revenues handed over to local authorities. The net reduction of taxation shown would be so much less, but the growth of revenue would be so much greater.

The comparison would be still more significant if we started from 1871 instead of 1861. Here we find the contrast in the growth of the branches of revenue mentioned to have been as follows:—

FIRST GROUP.

	1871.	1901.	Increase.	
			Amount.	Per Cent.
Customs	20·1	26·3	6·2	31
Excise	22·8	33·1	10·3	45
Stamps	3·6	7·8	4·2	116
	46·5	67·2	20·7	44

SECOND GROUP.

Income tax	6·4	26·9	20·5	320
Death duties	4·8	13·0	8·2	170
Post Office	5·3	17·3	12·0	226
	16·5	57·2	40·7	247

Thus, while an addition of about 21 million £ has been made to the first three branches of revenue in thirty years, an increase of less than 50 per cent., the addition in the case of the second group is almost exactly double, or 41 million £, and has been at the rate of 250 per cent. Here, again, the effect of the contrast would hardly be mitigated by including the additional taxes imposed a year ago. The additional weight thrown on income tax and death duties "leaps to the eyes."

3. The next point must be that this change in relative position among different branches of the revenue has not occurred automatically in any way, that is by some taxes in course of time, through a natural development, becoming more productive than others. It has occurred, on the contrary, at least very largely, as the result of legislative and other changes. If we analyse, in fact, the list of taxes repealed or reduced, and taxes imposed or increased, to which reference has already been made, we find that the reductions in the early period are largely reductions of duties of Customs and Excise, and the increases in the later period are largely increases of income tax and death duties. On this head the list of rates of duty on principal heads of Customs (Table X) appears instructive. There is a slight increase in the charge for spirits; a slight increase on tobacco generally, but a decrease in the rates for cigars and snuff; a great decrease in tea, from 1*s.* 5*d.* to 6*d.* per lb.; a great reduction in sugar, from 18*s.* 4*d.*, or 2*d.*

per lb. on refined, in 1861, to about ½*d.* per lb., in 1871, while after that the heading disappears altogether, only to be restored very partially in the current year; corn, which was 1*s.* a quarter in 1861, had disappeared from the list in 1871, though only just before that year; and timber and various other articles which were dutiable in 1861, have likewise vanished. The reductions, except sugar and tea, were not generally important in amount, but the changes on balance have been all one way. In Excise there have been fewer or hardly any reductions, if we except the transfers made between 1881 and 1891 to local authorities, but the amount yielded by Excise has increased more than Customs, and the two of course should be taken together. On the other side, it will be seen that income tax, after beginning at 10*d.* per £ in 1861, and being as low as 4*d.* in 1871, has since been raised to 1*s.* in 1901, and now stands, as all of us know, at 1*s.* 2*d.* in the £. No doubt another change in the way of reduction has taken place in the income tax as already mentioned, viz., the increase of the lower limit of the tax and the increase of the limit up to which abatements are made (see Table VII); but this does not alter the fact of the increase of the rate of the tax as far as incomes above 700*l.* are concerned. With regard to death duties it would be tedious to make an arithmetical comparison, but two or three changes of obvious effect have been made, viz., the subjection of real property to the same rates and mode of charging as personal property, an increase of the duties generally, and a special increase of the rate of duty in proportion to the increase of the size of properties. The marvellous increase of the death duties is thus in no way surprising.

The net result of the whole change is the substitution of income tax and death duties in our tax system for duties of Customs and Excise, especially for duties on tea and sugar, on which we relied largely in 1861, and still relied to some extent as late as 1871. They also take the place, of course, of the minor Customs duties on corn and timber, &c., which existed without any feeling against them as involving a breach of Free Trade, because in fact they yielded some useful money to the exchequer without inconvenience to business.

3. To show the exact proportion of certain branches of revenue to the total revenue at different times, a separate table (Table XII) has been added in the appendix. This table speaks for itself. It confirms fully what has already been said as to the change in our tax system which has occurred. Income tax and death duties, which supplied 20 per cent. or one-fifth of the revenue in 1861, and 16 per cent. only in 1871, supplied in 1901 no less than 31 per cent. of the total. Customs and Excise, on the other hand, which supplied

61 per cent. in 1861, and 63 per cent. in 1871, now supply 45 per cent. only.

Summing up this analysis of revenue, and comparing the results with the corresponding facts as to the growth of expenditure already dealt with, we may conclude, I believe, that the showing in some respects is not unsatisfactory. It is unpleasant to have to spend so much as we do on armaments, and to recognise that this expenditure, or at least a large part of it, is of a permanent character, and is not coming to an end with a definite closing of the South African war. It is nevertheless satisfactory so far that we can meet a high expenditure—double and more than double the figures of forty and even thirty years ago—as easily in reality as the expenditure of those years was met. A Rip Van Winkle of the early sixties, if he were to come back to life now, would not find his imperial burdens any greater. If he were a total abstainer and his income were below the income tax level, he would find his burdens even less than they were. A great change has been made in the interval in the substitution of some taxes for others; but we have only to do with substitution and not with an increase of burdens. Opinions will of course differ as to how far the substitution has been wise, and whether the pressure of income tax and death duties on the community as a whole, is not more severe than the pressure of the sugar and tea duties, which contributed a great deal, and the corn, timber, and other duties which contributed a little, to the revenue of thirty and forty years ago; but this is the only point of dispute raised by the present retrospect. As to the changes themselves and the causes, and our ability to meet the increased expenditure of the present time, with no real increase of burden as compared with a recent date, there is absolutely no dispute.

The Growth of Wealth.

The income tax tables and the supplementary tables generally contain further information as to the growth of the resources of the country upon which the expansion of the revenue depends. Though it is not really necessary to show the growth of the country's ability to meet the largely increased expenditure of recent years—and I shall probably have an opportunity after 1905, if the Society will permit me, of continuing those studies on the income tax returns which were commenced before you in 1878—still I may be allowed to add a few more remarks bearing directly on this question.

What I should like to notice first of all, then, is that the doubling of our wealth and of our ability to bear increased burdens does not depend on any astonishing change in the productiveness of the industry of the country. It depends mainly on two factors:

(1), the growth of population, and (2), a very moderate increase in the wealth of the population per head. If the population had doubled, the wealth per head remaining the same, there would be no doubt of the country having twice its former ability to bear taxation. But short of doubling, the population may increase so greatly in a given time that a very moderate addition to the wealth per head may produce the same result. Now the increase of population is obscured for this purpose by dealing with the United Kingdom as a whole, which causes the decrease of population in Ireland to set off in part the increase in Great Britain, although the two peoples are not homogeneous. If we put the two together the increase is from 28·9 millions in 1861 to 41·5 millions in 1901, or 43½ per cent., which would require an increase of nearly 40 per cent. in the wealth per head in the interval to account for the doubling of the resources of the country. But if we take Great Britain only, the progressive part of the country, we find the increase of numbers is from 23·1 to 37 millions, or 60 per cent., which would suffice for the doubling of the resources of the country with an increase of 25 per cent. only in individual wealth per head, by no means so astonishing an increase as that which must be allowed for with a smaller increase of population. Against such an increase the deduction of a portion of the poorer population would be a very small set-off.

What the actual increase per head is since 1861 has been already glanced at. It cannot, in any view, be less than 25 per cent., in face of the figures showing the growth of income tax assessments between 1861 and 1901 from 335½ million £ to 788 million £, or over 130 per cent., as compared with a growth of population, reckoning Great Britain only, of 60 per cent. This would imply an increase of 40 to 50 per cent. per head, and would certainly more than justify the assumption of an increase of 25 per cent. only, which is necessary to the doubling of the resources of the country. Reckoning, moreover, the changes in the income tax returns by which the gross amount is understated as compared with what was the case formerly, that is adding nearly 40 million £ to the above figure of 788 million £, the increase then would be no less that 140 per cent. as compared with an increase of 60 per cent. in population, and would imply an increase of wealth per head of over 50 per cent.

Comparing 1871 with 1901, we have an increase from 465·5 million £ in the income tax assessments to the above figure of 788 million £, or, rather, 828 million £, or at the rate of about 80 per cent. as compared with an increase of 54 per cent. in the population of Great Britain only. This would be equal to an increase of 16 per cent. per head, and, although not quite doubling the whole wealth of the country in thirty years, comes very near to doing so.

If it were possible to go more into detail with the income tax figures than has been found possible at short notice, these conclusions would be strongly supported. The large growth of "houses" for instance, nearly 200 per cent. (see Table XI), cannot but attract observation.

The great increase of the consumption of tea and sugar has already been adverted to, but the figures as to consumption of meat and other articles in the supplementary tables are equally instructive, and it is unnecessary to repeat them in detail. The evidence is, moreover, cumulative, the facts as to revenue supporting the other evidence as to the growth of wealth, and being themselves explained by that growth as they could not otherwise be explained. Nor is another fact apparent on the face of the supplementary tables and of the income tax returns, viz., the fact of a decline or stationary condition of agriculture and of some other industries, inconsistent with this conclusion. There is always an up and down in every sort of industry. New industries are continually starting up, and no one can foresee from year to year in what new directions we are to advance and where it is inevitable we should recede. The point is to have an increase of wealth and income on balance, and not set too much store on special changes.

Summary and Conclusion.

This paper has extended, I fear, beyond the modest limits intended by my friends. Let me hasten therefore to summarise what has been said, and add a word or two of comment, if not exhortation.

1. The expenditure of the Imperial Government of the United Kingdom has increased since the completion of Free Trade reform in 1861, and mostly since 1891, from an initial figure of about 70 million £ to the present total of 180 million £ or thereabouts, of which about 150 to 160 million £ may be considered of a permanent character.

2. No part of this increase is due to the increase of the debt charge, which has rather diminished.

3. Further, the increase is only due in small degree to Civil Service expenditure, which has increased a few millions only, apart from education, while the expenditure of Customs and Excise has hardly increased at all. The increase for education, however, is nearly 12 million £.

4. A large part of the increase is due to the Post Office department, the outlay for which has risen from 3 to 13½ million £, in

consequence, it is obvious, of the additional services which the department conducts for the benefit of the public as compared with what it formerly managed, and in consequence of the extensive growth of the older services themselves.

5. The main increase of expenditure is, however, due to Army and Navy, on which we spent in 1900-01 over 121 million £ as compared with little more than 30 million £ in 1861, and about 22 million £ only in 1871. Although 70 million £ of this increase is set down in the budget as for war, the ordinary growth of Army and Navy being set down as no more than about 30 million £, reasons are given for the opinion that the expenditure for armaments is not permanently reducible by so large a figure as the amount set down for war. A total permanent outlay of at least 150 million £ is considered to be highly probable, of which 80 million £ or over will be for Army and Navy.

6. The revenue has also increased greatly since 1861, viz., from about 70 to 130 million £ in 1900-01, and to an estimated figure of 142½ million £ in the current year.

7. It is considered, however, that notwithstanding the increase of burden, the country is as well able to bear this load as it was to bear the smaller sum of 70 million £ levied in 1861 and 1871. It is pointed out that the population of Great Britain has increased 60 per cent. since 1861, and that with a very small increase of wealth per head, so large an increase of the progressive part of the population implies the doubling, and more than doubling, of the resources of the country.

8. A table is also given, compiled from the official returns, as to taxes repealed or reduced, and imposed or increased since 1861, showing that on balance the taxes have not been increased, but have rather been diminished in the interval. The diminutions amount to 71 million £, and the additions to 62·6 million £, making a net reduction of 8·4 million £. Reasons are given for the opinion that the real reduction is even greater, but the fact is placed beyond question that the larger revenue now raised is not due in any way to new taxation as compared with 1861 and even 1871, but is exclusively an automatic growth, due to the increased productiveness of the former scale of taxation.

9. While taxation generally has not increased, great changes have occurred among the taxes themselves. While income tax and death duties have been increased enormously, indirect taxes have been struck off, particularly duties on tea and sugar, besides minor duties on corn, timber, and other articles, all of which, it is pointed out, were in existence at a time when Free Trade had been completely established, so that there is no question of Freo Trade involved in the substitution in question.

It is submitted, then, in conclusion, without going into all the arguments *pro* and *con*, that the time has now come for reviewing the question of national expenditure in a business way with reference to the international position and duties of the country, and without any concern as to the ability of the country to meet what is required. The time would also appear to have come for inquiring into the reasons for substituting income tax and death duties for certain indirect taxes. It can hardly be contended that the change has been deliberately made, seeing that the reductions of indirect imposts were made in the buoyant days, when prosperity was advancing by leaps and bounds, and we were drinking ourselves out of the "Alabama" claims, while the increase of income tax and death duties has taken place quite recently as a ready means of getting money, and without any inquiry as to the actual duties that had been last got rid of. No question as to Free Trade, it may be again repeated, is involved, as the nation was never more free trading than it was in the sixties. One or two duties, such as the corn duty, may be technically a breach of Free Trade, but the mischief resulting from such a breach, as it was considered in the days of Cobden, is much less than the mischief of a high income tax which is now the substitute. It is not proposed, however, to argue out the question here, but only to show that it is inevitably raised for discussion.

[Note.—I desire specially to express my thanks to Dr. Ginsburg, Secretary, and Mr. Mackenzie, Chief Clerk, for the preparation of the annexed tables. I have only been able to revise them partially, but I am sure they are completely trustworthy.—R. G.]

APPENDIX I.

TABLE I.—*Revenue and Expenditure of the Imperial Government of the United Kingdom.*

Years ending 31st March,	Revenue.	Expenditure.	Population of United Kingdom.	Expenditure per Head of Population.
	Mln. £.	Mln. £.		£ s. d.
1861	70·3*	72·8*	28·9	2 10 8
'71	69·9*	69·5*	31·5	2 4 3
'81	81·9	80·9	34·9	2 6 4
'91	89·5	87·7	37·7	2 6 6
1901	130·4	183·6†	41·5	4 8 6
Estimate for 1901-02....	142·5	191·3	41·5	4 12 2

* These figures include Army and Navy extra receipts and contributions by India for military charges, and are not strictly comparable with the later years. Excluding these amounts, the figures for 1871 would read, revenue 68·2 million £, expenditure 67·8 million £.

† Including 68·6 million £ for war expenditure.

TABLE IA.—*Revenue received by Imperial Government, and paid over to Local Authorities, and Government subventions as acknowledged by Local Authorities.*

[Mln. £'s.]

	Amount Received and Handed Over to Local Authorities.	Subventions as Acknowledged by Local Authorities.
1861................	—	—*
'71................	—	—*
'81................	—	3·4
'91................	7·1	8·6
1901................	9·6	14·2

* There were Government grants in 1861 and 1871, as well as in later years; but the summary of the local taxation accounts in the "Statistical Abstract," from which the figures in this column were taken, does not go so far back as 1861, and the exact sums for comparison could only be ascertained with difficulty. They would be less, and not more, than in 1881.

Note.—The amounts in column 1 do not appear in the ordinary accounts of Imperial revenue and expenditure. The amounts in the second column include the amounts in the first column as well as in the grants.

TABLE II.—*Amount of the National Debt, and Charge for Interest.*

[Mln. £'s.]

Years ending 5th April,	Total Debt, excluding Local Loans Stock after 1881.	Annual Charge for Interest and Sinking Fund in Budget.
1861	824·6	26·3
'71	789·2	26·8
'81	770·8	29·6
'91	686·0	25·2
1901	705·7	19·8
'02 (estimated)	—	21·6

Note.—The annual charge includes the amount of the whole instalment for annuities as well as interest on the permanent funded debt, and also includes other appropriations for repayment of debt, varying in different years. After 1881 a separate issue was made of local loans stock, and the amount of this stock is not now included as part of the national debt, there being corresponding assets on the other side, and the receipts and payment of interest being outside the budget. To make a proper comparison, the amounts for the earlier years, 1861, 1871, and 1881, should be reduced somewhat. The local loans about 1887, when the change was made, amounted to 36 million £.

TABLE III.—*Army and Navy Expenditure, excluding Amounts Charged to Capital.*

[Mln. £'s.]

Years.	Army.	Navy.	Total.	
1861.....................	15·0	13·3	31·3*	* Including 3 mln. £ for Chinese war.
'71.....................	13·5†	9·0	22·5	† Including 1·4 mln. £ vote of credit, war in Europe.
'81.....................	14·7	10·5	25·8‡	‡ Including 500,000*l.* grant for Afghan war, &c.
'91.....................	17·9	15·5	33·5	
1901.	91·9	29·5	121·4§	§ Including 68·6 mln. £ for war expenditure.
'02 (estimate)	90·0	30·9	120·9‖	‖ The figure has been changed several times, and this is the nearest I can give.

TABLE IV.—*Civil Service and Post Office Expenditure.*

[Thousand £'s.]

1 Years ending 31st March,	2 Consolidated Fund Charges, exclusive of Debt Charges.	3 Education.	4 Other Civil Service Expenditure.	5 Total.	6 Revenue Collection, Excise and Customs.	7 Post Office Telegraphs and Packet Service.
1861	2,296,	1,097,	6,266,	9,659,	2,569,	2,999,*
'71	2,113,	1,859,	7,991,	11,963,	2,573,	3,949,
'81	1,670,	4,281,	11,405,	17,356,	2,850,	5,372,
'91	2,068,	6,114,	9,551,	17,733,	2,643,	8,661,
1901	1,569,	12,662,	10,623,	24,854,	2,834,	13,471,

* Post Office and packet service only.

Note.—The figures in column 4 are obtained by subtracting the totals of columns 2 and 3 from column 5.

TABLE V.—*Principal Branches of Revenue.*

[Mln. £'s.]

	1861.	1871.	1881.	1891.	1901.
Total Imperial expenditure	72,8*	67,8	80,9	87,7	183,6
Total Imperial revenue—					
Customs	23,3	20,1	19,2	19,5	26,3
Excise	19,4	22,8	25,3	24,8	33,1
Stamps (excluding death duties)	4,9	3,6	4,5	5,9	7,8
Income tax	10,9	6,4	10,7	13,3	26,9
Land tax†	3,1	2,7	1,0	1,0	8
House duty			1,7	1,6	1,7
Death duties	3,4	4,8	6,6	7,5	13,0
Post Office and telegraphs	3,4	5,3	8,3	12,3	17,3
Miscellaneous (including interest on advances for local works and Government Suez Canal shares, &c.)	1,9	2,5	4,6	3,6	3,6
Total	70,4	68,2	81,9	89,5	130,4
‡*Revenue received and paid to local authorities—*					
Customs	—	—	—	2	2
Excise	--	—	—	1,1	1,4
„ licences	—	—	—	3,4	3,9
Death duties	—	—	—	2,4	4,1
Total	—	—	—	7,1	9,6

* Including Army and Navy extra receipts, and the contributions by India for military charges, formerly brought to account as revenue, and thus causing a corresponding increase in expenditure.

† These figures were not given separately in the "Statistical Abstract" in 1861 and 1871.

‡ These receipts formerly formed part of the Imperial revenue; since 1888-89 they have been paid to the local authorities in relief of local burdens.

TABLE VI.—*Net Receipts from Principal Heads of Customs.*

[Thousand £'s.]

	1861.	1871.	1881.	1891.	1901.
Customs—					
Spirits (foreign and colonial)	2,624,	4,419,	4,444,	4,493,	4,770,
Tobacco and snuff	5,606,	6,614,	8,659,	9,534,	12,839,
Tea	5,420,	3,235,	3,866,	3,412,	6,265,
Sugar and molasses	6,067,	3,219,	—	—	—
Coffee	439,	416,	200,	182,	190,
Cocoa....................................	—	32,*	53,*	105,	242,
Currants, raisins, and dried fruits	219,*	463,	491,	324,	349,
Wine..	1,145,	1,584,	1,376,	1,318,	1,488,
Corn, meal, and flour	869,	—	—	—	—
Timber	237,*	—	—	—	—
Other imported articles	395,	127,	88,	80,	90,
Miscellaneous receipts	258,	129,	34,	32,	39,
Total	23,278,	20,239	19,210,	19,479,	26,271,

* Gross receipts.

TABLE VII.—*Income Tax Assessments, Schedules A—E, Gross Amounts, Years ending 5th April.*

[Mln. £.]

Divisions.	1861.	1871.	1881.	1891.	1900.
England	282,2	398,4	493,6	597,3	678,7
Scotland	30,4	41,0	55,5	63,4	75,8
Great Britain	312,6	439,4	549,1	660,7	754,5
Ireland	23,0	26,1	36,1	37,8	33,5
United Kingdom...	335,6	465,5	585,2	698,4	788,0

Year............	1861.	1871.	1881.	1891.	1900.
General rate to tax	10*d*.	4*d*.	6*d*.	6*d*.	1*s*.
Lowest income without abatement	150*l*.	200*l*.	400*l*.	400*l*.	700*l*.
Lowest income taxed	100*l*.	100*l*.	150*l*.	150*l*.	160*l*.
Abatements—					
On income under	150*l*.	200*l*.	400*l*.	400*l*.	(*a*.) 400*l*. (*b*.) 500*l*. (*c*.) 600*l*. (*d*.) 700*l*.
Amount of abatement	Pay 7*d*. rate only	60*l*.	120*l*.	120*l*.	(*a*.) 100*l*. (*b*.) 150*l*. (*c*.) 120*l*. (*d*.) 70*l*.

TABLE VIII.—*Net Receipts from Principal Heads of Excise.*

[Thousand £'s.]

	1861.	1871.	1881.	1891.	1901.
Excise—					
Spirits	9,226,	11,464,	14,394,	14,771,	19,207,
Malt	6,209,	6,978,	2,676,	—	—
Beer	—	—	3,482,	9,390,	13,491,
Sugar used in brewing	—	95,	502,	—	—
Chicory	—	17,	1,	2,	1,
Coffee mixture labels	—		—	3,	2,
Railways	—	506,	748,	324,	331,
Licences	1,493,	3,729,	3,568,	230,	250,
Other receipts	2,621,	45,	—	4,	5,
Total	19,548,	22,834,	25,372,	24,724,	33,287,

Net Receipts of Duties Collected for Local Authorities by Imperial Officers.

Additional beer and spirit duties — Customs	—	—	—	206,	219,
Additional beer and spirit duties — Excise	—	—	—	1,095,	1,367,
Excise licences	—	—	—	3,360,	3,886,

TABLE IX.—*Yield of a Penny on the Income Tax at different Periods.*

	Figures from the Budget Speech.	Figures from Inland Revenue Returns.
	£	£
In 1901 a penny produced	2,400,000	2,426,000
" 1891 a penny produced	2,300,000	2,215,856
" '81 a penny produced	1,943,000	—
" '71 a penny produced	1,525,000	—
" '61 a penny produced	1,100,000	—

TABLE X.—*Rates of Duty on Principal Heads of Customs.*

Articles.	1861.	1871.	1881.	1891.	1900-01.
Spirits, foreign and colonial *per gall.*	10*s.* 2*d.* to 10*s.* 5*d.*	10*s.* 2*d.* to 10*s.* 5*d.*	10*s.* 4*d.*	10*s.* 4*d.* and 6*d.* for local taxation	11*s.* 4*d.*
*Tobacco and cigars — Unmanufactured .... *per lb.*	3*s.*	3*s.* to 3*s.* 6*d.* and 5 per cent. add.	3*s.* 6*d.* to 3*s.* 10*d.*	3*s.* 2*d.* to 3*s.* 6*d.*	3*s.* to 3*s.* 4*d.*
*Tobacco and cigars — Manufactured and cigars ,,	9*s.*	4*s.* 6*d.* to 5*s.*	4*s.* 4*d.* to 5*s.* 6*d.*	4*s.* to 5*s.*	3*s.* 10*d.* to 5*s.* 6*d.*
Tobacco, snuff .... ,,	6*s.*	3*s.* 9*d.*	4*s.* 1*d.* to 4*s.* 10*d.*	3*s.* 9*d.* to 4*s.* 6*d.*	3*s.* 7*d.* to 4*s.* 4*d.*
Tea .... ,,	1*s.* 5*d.*	6*d.*	6*d.*	4*d.*	6*d.*
Sugar and molasses, *per cwt.* — Raw	12*s.* 8*d.* to 16*s.*	4*s.* to 5*s.* 8*d.*	—	—	—
Sugar and molasses, *per cwt.* — Refined	18*s.* 4*d.*	6*s.*	—	—	—
Coffee — Kiln dried .... *per lb.*	—	—	2*d.*	2*d.*	2*d.*
Coffee — Raw .... ,,	4*d.*	4*d.*	—	—	—
Coffee — ,, ... *per cwt.*	—	—	14*s.*	14*s.*	14*s.*
Cocoa .... *per lb.*	1*d.*	1*d.*	1*d.*	1*d.*	1*d.*
,, chocolate and paste.... ,,	2*d.*	2*d.*	and prep 2*d.*	ared cocoa 2*d.*	imported 2*d.*
,, butter .... ,,	—	—	—	—	1*d.*
,, in husk...................... *per cwt.*	2*s.*	2*s.*	2*s.*	2*s.*	2*s.*
Currants .... ,,	7*s.*	7*s.*	7*s.*	2*s.*	2*s.*
Raisins, figs, &c. .... ,,				7*s.*	7*s.*
Wine (not in bottles) .... *per gall.*	1*s.* to 2*s.* 11*d.*	1*s.* to 2*s.* 6*d.* and	1*s.* to 2*s.* 6*d.* 3*d.* a degr	1*s.* to 2*s.* 6*d.* ee over 42	1*s.* 3*d.* to 3*s.* proof
Corn — Wheat .... *per qr.*	1*s.*	—	—	—	—
Corn — Meal, &c. .... *per cwt.*	4½*d.*	—	—	—	—
Timber — Hewn .... *per load*	1*s.*	—	—	—	—
Timber — Sawn, &c. .... ,,	2*s.*	—	—	—	—
Timber — Teak, for ships.... ,,	1*s.*	—	—	—	—
Beer — Mum and spruce *per 36 gall.*	1*l.*	1*l.* 1*s.* to 1*l.* 4*s.*	1*l.* 6*s.* to 1*l.* 10*s.* 6*d.*	1*l.* 6*s.* to 1*l.* 10*s.* 6*d.*	1*l.* 12*s.* to 1*l.* 17*s.* 6*d.*
Beer — Other sorts .... ,,	1*l.*	8*s.* to 16*s.*	6*s.* 6*d.*	6*s.* 6*d.*	8*s.*
Hops .... *per cwt.*	1*l.*	—	—	—	—
Malt .... *per qr.*	1*l.* 5*s.*	1*l.* 4*s.* To 1st April, 1871, 1*l.* 5*s.*	—	—	—
Cards, playing........... *per doz. packs*	15*s.*	3*s.* 9*d.*	3*s.* 9*d.*	3*s.* 9*d.*	3*s.* 9*d.*
Corks, ready made............... *per lb.*	3*d.*	(Free from	1st April,	1861)	
Dice .... *per pair*	1*l.* 1*s.*	—	—	—	—
Hats or bonnets.................... *per lb.*	1*l.* 3*s.*	(Free from	1st April,	1861)	
Paper — Paper and books.... *per cwt.*	15*s.* to 16*s.*	(Free fro	m 1st Octo	ber, 1861)	
Paper — Printed, painted or stained paper hangings .... ,,	14*s.*				
Plate — Gold .... *per oz.*	17*s.*	17*s.*	17*s.*	—	—
Plate — Silver........................ ,,	1*s.* 6*d.*	1*s.* 6*d.*	1*s.* 6*d.*	—	—

* Tobacco. In 1871 and 1881, higher duty charged when containing less than 10 per cent. of moisture.

In 1891, higher duty charged when containing less than 13 per cent. of moisture.

,, 1900-01 ,, ,, 10 ,,

TABLE X.—*Rates of Duty on Principal Heads of Customs—Contd.*

Articles.		1861.	1871.	1881.	1891.	1900-01.
Ships: foreign, built of wood. On the registration thereof as British ships, for *every ton* of gross registered tonnage, without any deduction in respect of engine room or otherwise		1*s*.	—	—	—	—
Varnish, containing any quantity of spirit or alcohol	*per gall.*	12*s*.	12*s*.	—	—	—
Vinegar	,,	3*d*.	3*d*.	—	—	—
,, pickles, preserved in vinegar	,,	1*d*.	1*d*.	—	—	—

TABLE XI.—*Gross Assessments to Income Tax of Lands, Houses, and Railways (United Kingdom). Years ending 5th April.*

[Million £'s.]

	Lands.	Houses.	Railways (United Kingdom).
1862	60·3	61·9	14·8
'71	65·4	86·3	22·0
'81	69·3	117·5	29·1
'91	57·7	140·6	36·4
1900	52·8	174·4	39·4

TABLE XII.—*Proportion of certain Branches of Revenue to Total Revenue (Exchequer Receipts). Years ended* 31*st March.*

Branch of Revenue.	1861.		1871.		1881.		1891.		1901.	
	Million £.	Per Cent. of Total.	Million £.	Per Cent of Total.	Million £.	Per Cent. of Total.	Million £.	Per Cent of Total.	Million £.	Per Cent. of Total.
a. Property and income tax....	10·9	15	6·4	9	10·7	13	13·3	15	26·9	21
b. Death duties........	3·5	5	4·8	7	6·7	8	7·4	8	13·0	10
c. House duty and land tax........	3·1	4	2·7	4	2·7	4	2·6	3	2·5	2
Total............	17·5	24	13·9	20	20·1	25	23·3	26	42·4	33
d. Customs and excise............	42·7	61	42·9	63	44·5	54	44·3	49	59·4	45
e. Stamps	5·0*	7	3·6*	5	4·4*	5	6·0*	7	7·8	6
f. Post office and telegraph service	3·4	5	5·3	8	8·3	10	12·3	14	17·3	13
Miscellaneous	1·8	3	2·5	4	4·6	6	3·6	4	3·5	3
Total revenue...	70·4	100	68·2	100	81·9	100	89·5	100	130·4	100

* Excluding death duties.

TABLE XIII.—*Statement of Taxes Imposed or Increased, and Repealed or Reduced, in the Years* 1861-1901, *showing the Estimated Gain or Loss in a complete Year.*

[In million £'s.]

Years ended 31st March,	Period 1861-71.		Years ended 31st March,	Period 1881-91.	
	Imposed or Increased.	Repealed or Reduced.		Imposed or Increased.	Repealed or Reduced.
1862	0·1	2·7	1882	0·7	2·6
'63	0·3	0·4	'83	2·8	—
'64	—	4·6	'84	—	3·3
'65	0·1	3·4	'85	2·0	—
'66	—	5·3	'86	4·3	—
'67	—	0·6	'87	—	—
'68	1·6	0·3	'88	0·1	2·6
'69	1·5	—	'89	0·9	3·5
1870	1·1	4·8	1890	1·4	3·7
'71	0·1	4·6	'91	—	3·1
	4·8	26·7		12·2	18·8

Years ended 31st March,	Period 1871-81.		Years ended 31st March,	Period 1891-1901.	
	Imposed or Increased.	Repealed or Reduced.		Imposed or Increased.	Repealed or Reduced.
1872	3·1	—	1892	—	—
'73	—	3·9	'93	—	—
'74	—	3·2	'94	2·2	—
'75	—	4·3	'95	7·2	1·6
'76	—	—	'96	—	—
'77	1·8	0·4	'97	—	2·3
'78	—	—	'98	—	—
'79	4·5	0·1	'99	—	1·3
1880	—	—	1900	1·0	—
'81	11·6	8·4	'01	14·2	—
	21·0	20·3		24·6	5·2

Summary.

Period.	Imposed or Increased.	Repealed or Reduced.
1861–71	4·8	26·7
'71–81	21·0	20·3
'81–91	12·2	18·8
'91–1901	24·6	5·2
	62·6	71·0
Deduct taxes imposed or increased........................	—	62·6
Net reduction	—	8·4

APPENDIX II.

Supplementary Tables.

	1861.	1871.	1881.	1891.	1901.
Population—					
England mlns.	20,1	22,7	26,0	29,0	32,5
Scotland ,,	3,1	3,4	3,7	4,0	4,5
Great Britain ,,	23,1	24,1	29,7	33,0	37,0
Ireland ,,	5,8	5,4	5,2	4,7	4,5
Total ,,	28,9	31·5	34,9	37,7	41,5
United Kingdom—					
Birth-rate per 1,000 (3 years' average)	(Gt.Britain) 34·6	33·6	32·8	29·9	1897–98–99 28·9
Death-rate per 1,000 (3 years' average)	(Gt.Britain) 21·6	21·5	19·9	19·2	1897–98–99 17·9
Marriage-rate per 1,000 (3 years' average)	(Gt.Britain) 16·4	15·0	13·6	14·4	1897–98–99 15·4
Production of coal mln. tons	83,6	117,4	154,2	185,5	225,2*
Pig iron† ,,	3,7	6,6	8,1	7,4	9,0*
Ships built 1,000 tons (Exclusive of vessels built for foreigners and of vessels built for the Royal Navy)	200,8‡	354,4	501,2	670,6	736,9*
Miles of railway open 1,000	10,9	15,4	18,2	20,2	21,9*
Acres cultivated mlns.	45,4§	46,7	47,6	48,2	47,8
Corn crops ,,	11,4§	11,8	10,7	9,4	8,5
Green crops ,,	4,9§	5,3	4,8	4,5	4,2
Permanent pasture ,,	22,1§	22,5	31,2	27,6	28,4
Stock of cattle ,,	8,7§	9,3	9,9	11,3	11,5
,, sheep ,,	33,8§	31,4	27,9	33,5	30,8
Shipping owned—					
Sailing mln. tons	3,9	4,3	3,6	2,8	2,0*
Steam ,,	0,4	1,3	2,9	5,3	7,4*
Total ,,	4,3	5,6	6,5	8,2	9,4*
Crews of shipping 1,000's	172‖	200‖	193‖	240¶	247*¶
Foreign trade—					
Imports of merchandise mln. £'s	217,5	331,0	397,0	435,4	522,2
Re-exports of foreign and colonial produce ,,	34,5	60,5	63,1	61,9	67,8
Net imports ,,	183,0	270,5	333,9	373,5	454,4
British and Irish exports ,,	125,1	223,1	234,0	247,2	280,5**
Excess of imports ,,	57,9	47,4	99,9	126,3	173,9

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* Figures for 1900.

† Including pig iron produced from foreign ores.

‡ Vessels built and first registered in United Kingdom.

§ Figures for 1867.

‖ Excluding masters.

¶ Including masters. Including Lascars and Asiatics serving under Asiatic articles of agreement.

** Including ships, new (not registered as British).

Supplementary Tables—Contd.

		1861.	1871.	1881.	1891.	1901.
***Imports*—**						
Wheat	mln. cwts.	30,0	39,4	57,1	66,3	69,7
„ flour	„	6,2	4,0	11,4	16,7	22,6
Wheat and wheat flour	„	36,2	43,4	68,5	83,0	92,3
Rice	„	3,3*	4,6*	8,5	6,2	6,8
Indian corn	„	13,2	16,8	33,5	26,8	51,4
Barley	„	5,0	8,6	9,8	17,5	22,1
Oats	„	5,1	10,9	10,8	16,6	22,5
Sugar	„	11,9	14,4	22,1	28,8	38,2
Tea	mln. lbs.	96,6	169,9	209,8	240,8	297,3
Timber (excluding furniture and hard woods)	mln. loads	3,4	4,6	5,7	6,8	9,2
Raw cotton	mln. cwts.	11,2	15,9	15,0	17,8	16,3
„ wool	mln. lbs.	147,2	323,0	451,4	721,9	712,2
„ jute	mln. cwts.	0,9	3,5	4,9	6,9	6,4
„ silk, and thrown and spun	mln. lbs.	8,8	8,4	3,0	3,0	2,0
Flax and hemp	mln. cwts.	2,2	3,9	3,3	3,8	4,3
Hides, imported	„	0,9†	1,3	1,0	1,0	1,1
Leather „	mln. lbs.	—	23,1	66,4	108,5	148,2
Iron ore imported	1,000 tons	—	824,0	2,451,	3,180,5	5,546,8
Copper ore and regulus	„	94,5	76,4	147,	212,2	192,7
„ unwrought and part wrought	1,000 cwts.	324,5	657,5	690,0	930,0	1,354,0
Pig iron, in bars, unwrought and part wrought	1,000 tons	35,5	74,3	111,5	139,3	198,5
Lead, pig and sheet, unwrought and part wrought	„	23,1	64,9	93,6	169,7	218,1
Tin, unwrought and part wrought	1,000 cwts.	73,1	171,7	406,2	564,1	707,9
***Exports*—**						
Coal	mln. tons	7,9	12,7	19,6	31,1	43,8
Cotton piece goods	mln. yds.	2,563	3,417	4,777,3	4,912,5	5,364,6
Wool, and woollen and worsted yarn	mln. lbs.	42,2	55,7	43,8	58,2	68,9
Wool, and woollen and worsted yarn manufactured	mln. yds.	164,4	367,9	272,9	224,8‡	156,2‡
Jute and linen yarn	mln. lbs.	35,0	49,9	36,3	48,0	56,0
„ „ manufactured	mln. yds.	116,4	282,8	378,3	443,1	365,6

* Excluding rice imported in the husk.

† Including tanned and untanned.

‡ Blankets not included.

Supplementary Tables—Contd.

			1861.	1871.	1881.	1891.	*1900.*
Articles retained for Home Consumption.							
Consumption per head—							
	Sugar, raw and refined	lbs.	35·49	46·73	67·35	80·17	87·7
	Tea	„	2·69	3·91	4·58	5·36	6·11
	Spirits	gallons	0·86	1·06	1·06	1·04	1·12
	Malt, British	bushels	1·61	1·72	—	—	—
	Beer	gallons	—	—	27·79	30·16	31·75
	Wine	gallon	0 37	0·51	0·45	0·39	0·39
Imported—							
	Wheat	lbs.	134·51	150·43	180·67	195·04	187·34
	„ meal and flour	„			36·23	49·01	57·90
	Bacon and hams		1·97	3·41	13·95	13·11	19·62
	Beef, salted and fresh		—	—	3·37	6·19	11·74
	„ (from imported, live)		—	—	—	9·02	9·23
Meat	Mutton, fresh		—	—	—	4·91	9·28
	Pork, salted and fresh		—	—	1·16	0·92	2·54
	Meat, preserved, other than salted		—	—	1·78	2·11	1·92
Petroleum—							
	Imports	mln. galls.	0,4	9,0	59,2	130,6	255,0
	Population	mln.	28,9	31,5	34,9	37,7	41,5
	Per head	gallons	—	0·29	1·69	3·46	6·14

DISCUSSION *on* SIR ROBERT GIFFEN'S PAPER.

SIR ALFRED BATEMAN, K.C.M.G., having taken the Chair, in place of the President, who was compelled to leave, welcomed the opportunity thus accidentally given to him of presiding at a meeting at which his distinguished predecessor at the Board of Trade had read one of those excellent papers which he had contributed to the Society. Even if Sir Robert Giffen were to come there as an economic heretic, they would welcome any paper of his. He had provided already a good many attractive papers, and the present one was, above all things, suggestive. No doubt it would be criticised by the experts present, rather from the point of view of what it hinted at than of what it said. There was a charming and cheerful optimism about it which was very agreeable in these days of depression. That optimism was especially noticeable in the passage where Sir Robert spoke of the paper which he proposed to read after the year 1905, and, whatever they might think of the present paper, that was a hope which they would all wish might be fulfilled. It was, he was sure, the hope of all present that Sir Robert would be able to fulfil his promise to give them another paper, and indeed, many others, after the year 1905.

The Right Hon. G. SHAW LEFEVRE said he felt it difficult to enter upon a discussion of Sir Robert Giffen's paper without raising questions of policy wider than it was perhaps desirable that that Society should embark upon. The whole of the paper was based upon the proposition that in the author's view the expenditure of the country upon Army and Navy should be very largely increased. The statistical tables which Sir Robert had given were no doubt very valuable and very clear throughout, but they appeared to him to be a peg on which to hang the proposition enlarged upon at the end of the paper, namely, that a considerable revision should take place in the taxation of the country in the sense that a larger proportion of the revenue should be raised by indirect taxation upon the food of the country, and a smaller proportion from the Income Tax and the Death Duties. This again was based on the proposition that the expenditure of the country upon the Army and Navy must be very largely increased. He could not himself subscribe to this. He did not believe it was necessary to increase the enormous expenditure of the country on the Army and Navy, but rather the reverse. He thought that the view of Sir Robert Giffen on this point was unfounded and unjustifiable. It seemed to arise from an exaggerated militarism. He entirely agreed with him in disregarding all other expenditure, such as that on Education and the Post Office. It was mainly with the Army and Navy that they had to deal in commenting on the national expenditure. The expenditure on

Army and Navy now amounted to 60 million £. It had nearly trebled since 1871, and had doubled since 1891. But Sir Robert Giffen not only thought it necessary to add another 20 million £, but, not satisfied even with that addition, thought that another 20 million £ would have to be added, bringing up the total to 100 million £. With regard to the Navy, he would remind the Society that the expenditure between the years 1869 and 1894 under successive Governments amounted on the average to no more than 10 million £ a year. It then rose by degrees, and in 1891 it amounted to about 15 million £. Since then it had been going up by "leaps and bounds," and now amounted to 30 million £. Sir Robert Giffen was not satisfied with that enormous addition, and wanted to add another 10 million £ to it. His demands went far beyond those of the most extreme of naval alarmists. Even Lord Charles Beresford, in a speech he made a few days ago, stated that he considered an expenditure of 30 million £ upon the Navy was quite sufficient, but he thought that the money might be better spent. Personally he was always inclined to discount Lord Charles' demands by 20 per cent. But Sir Robert Giffen, with his superior knowledge of the wants of the Navy, and he presumed of the intentions of other Powers, asked them to write down another 10 million £ on that service. Then again as to the Army, the cost of which had doubled in the last ten years, they had been told recently by the Secretary for War that in his view the normal force should be 270,000 men, at an annual cost of 30 million £, these estimates to include the provision of a force of 15,000 men in South Africa. Here again Sir Robert Giffen was not satisfied with the demands of the responsible chiefs of the Army, and asked us to write down another 100,000 men as being necessary for the permanent establishment—50,000 men being for the occupation of South Africa, and 50,000 at home to provide for their relief. The increased cost of this he estimated at 13 million £. That was an alarming view of the future of South Africa. It would mean that for every able-bodied Boer in the two States which had been annexed as British Colonies, we should have to keep an armed British soldier as a sentinel or guard. He could not but hope himself that the war would end in an understanding with the Boers which would render it unnecessary to keep a large force in South Africa. By adding his estimated increase of 20 million £ to the existing expenditure of 60 million £, Sir Robert having increased the expenditure on the Army and Navy by 20 million £, arrived at a total normal expenditure of the country of 150 million £, as compared with 130 million £, the present estimate. As the revenue for the current year was estimated at 142 million £, it would appear that an increase of taxation would become necessary beyond the present war taxation. So far from giving them any hope that at the end of the war there would be a reduction of taxation, Sir Robert evidently contemplated a further increase. Sir Robert then proceeded to make a comparison with the year 1861, and said that the present taxation was no greater in amount relatively than that in 1861, and that the country was just as well able to bear the burden now imposed upon it as it was to bear its burden in that year. He did not quite agree with Sir Robert's figures as to that, but he would assume that he was right and that the amount of taxation in 1861 was relatively about equal to that at the present moment. He must remind the meeting that there were grave complaints in 1861 against the then taxation and the then expenditure. Having entered Parliament not long after that date, he could bear testimony to the strong feeling there was then in Parliament against the excessive expenditure of the country and the excessive taxation. As a result, with the concurrence of both parties, there was a great reduction in the expenditure on the Army and Navy. That average rate of expenditure was maintained by both parties, and was not increased for many years. It followed that Parliament was able to reduce the income tax from 10*d.*, at which it stood in 1861, to 4*d.* in 1871. It was able also to abolish the sugar duties, to reduce the tea duties by two-thirds, to abolish the remaining tax upon wheat and timber, and in a variety of other ways to reduce taxation. He believed himself that a great deal of the prosperity of the succeeding twenty or twenty-five years was due to this reduction of taxation, and to the husbanding of the resources of the country, and that much of the improvement in the condition of the labouring people resulted from the fact that taxes were taken off articles of food, such as tea, sugar, and wheat. But Sir Robert Giffen would go back upon all this. He considered it necessary to maintain the present war taxation, and to revise it in the sense of throwing the burden upon the food of the people. He (the speaker) did not think it was necessary to increase the expenditure of the country, and it would be a grave misfortune if Sir Robert's view were adopted, and the taxes upon tea and sugar were increased. If the present normal rate of expenditure were maintained, and not increased, it would be possible at the end of the war, according to Sir Robert Giffen's figures, to reduce taxation by 20 million £. That would enable the Chancellor greatly to reduce the Income Tax, to abolish the Sugar Duty, and to reduce the duty on tea, and to repeal the Coal Tax. For his part, he believed it might be possible to effect a still greater reduction in the naval and military expenditure, and he looked forward himself, therefore, to still further reduction of taxation. For these reasons he could not subscribe to the proposals of Sir Robert Giffen, which he thought were unwise and unnecessary, and due to an altogether exaggerated view of the military wants of the country.

Sir **Guilford Molesworth**, K.C.I.E., remarked that it was necessary in the first place to discriminate between the sources from which our finances were recruited. These were: First, from the proceeds of investments; Secondly, from industries and commerce. And, with reference to the first, it was necessary to carry back the retrospect further than 1861. In 1815, at the close of the war, the whole trade and commerce of the world was in our hands, our dependence on foreign supplies engendered by a policy of free imports had caused the price of wheat to rise to 126*s.* per quarter. The Corn

Laws were then re-enacted and the policy of strict protection was adopted. The prosperity of England under this policy was very great. Alison in his "History of Europe" had stated: "There is no example in the annals of mankind of a nation having made such advance in industry, wealth, and number. During the thirty years which elapsed after the Battle of Waterloo the population increased more than half, its imports doubled, its exports tripled, its shipping doubled, agriculture prospered. The dependence on foreign supplies steadily diminished until the grain imported on the average of five years preceding 1835 was only one two-hundredth part of the average year's consumption." The price of wheat steadily fell, and in 1835 was the lowest that has been reached during the half century 1800-50. The distress in 1843 which led to the anti-corn law agitation in England, and subsequently to the adoption of Free Trade, had nothing to do with the Corn Laws, for, excepting 1835, the price of wheat was lower than it had been during the century. It was a money famine, not a bread famine. The whole of the civilised world shared that wonderful tide of prosperity which was due to inventions in machinery and manufactures, to the introduction of railways and steam navigation which set in about the year 1835, and was increased by the gold discoveries of 1850-55, but England was in a position to take the lion's share; she had, in fact, under a policy of strict protection, amassed enormous capital, and, when Free Trade was adopted in 1846, she was the great capitalist nation; she had the markets of the world in her hands, she had a monopoly of manufacture, having then developed her coal, and her iron, and her textile industries, and she not only supplied every country with her machinery and manufactures, but she also furnished capital for railways, and for every public work abroad, with the understanding that plant of every description should be supplied from England; but it was to be feared that the last twenty or twenty-five years had made great inroads on her capital. She was living on her investments, spending more than she produced, as indicated by the excess of 173 million £ of imports beyond her exports in 1901. Turning to the second source of our wealth, the condition of our industries did not appear to justify the assertion that the period between 1861 and 1891 had been one of great and continuous prosperity. It would naturally take a long time for other nations to overtake her when she had so formidable a start, and it was not until twenty or twenty-five years after the introduction of Free Trade, in 1846, that the effects of our policy began to tell upon her, with the result that our agriculture had been ruined and our other industries had been struggling hard for existence. Our markets were contracting, no other civilised countries had adopted Free Trade, but all were increasing their tariffs. Even our colonies had adopted the policy of protection. Evidence before the Royal Commissions appointed in 1879, 1885, and 1893, to inquire into the depression of our industries, showed that there was a permanent and increasing depression in British trade and industry, especially agriculture. Nearly three million acres of wheat had gone out of cultivation, and while the production of wheat had diminished so greatly in England, it had greatly increased in protectionist countries on the continent. In 1891 the tin plate trade had been ruined by the McKinley Act, and had seriously affected the South Wales iron trade. The depression extended to almost every industry. Most of the witnesses before the Commissioners attributed the depression to increased foreign competition and to the burden of taxation, but especially local taxation. The increased discoveries of gold throughout the world in recent years had somewhat improved trade and caused a slight revival in our industries, but the competition of foreign nations was greatly increasing in intensity. Mr. Ernest Williams's Book, "Made in Germany," disclosed a very serious menace to our trade, and Sir Courtney Boyle was constrained to admit that the competition of Germany and the United States was very serious. The competition of America was far more formidable than that of Germany. America was handicapped by wages nearly double those which prevailed in England, and by the heavy tariff of the McKinley Act, which our statesmen prophesied would be the ruin of the United States. But during the decade 1890-99, under the McKinley tariff, the United States enjoyed great prosperity, and increased her exports by nearly 85 million £, while our increase was represented by less than 1 million £. America increased her exports by 48 per cent. in ten years, while England increased her exports by only ¼ per cent. This, he urged, was a proof that the time had come to review our policy. He proceeded to criticise our system of taxation, and pointed out that Mr. McKinley had shown that between 1870 and 1880 Free Trade had increased our rate of taxation by over 24 per cent., whilst the United States in the same decade had diminished it by nearly 10 per cent. Sir Robert Giffen's comparison of taxation per head of population was misleading. Our present fiscal policy did not tax the masses directly *pro rata*, but placed the burden on the wealthy classes—that is, on the capitalists, or, in other words, mainly upon our industries. This told heavily upon them in competition with the foreigner, and ultimately re-acted on the working classes in reduction of wages and employment. Moreover, Sir Robert had altogether neglected to take into account that local taxation of which the burden was so heavily felt, and which amounted to more than 100 million £ in 1901. It had nearly quadrupled in the last twenty-four years, and was increasing by leaps and bounds. We had imported in 1900 manufactured goods to the value of 55 million £, and food to the value of 120 million £, but not a penny has been paid by the foreign producers of these articles as their share of the burden of taxation. How could our industries sustain competition under such unfair conditions? Our system of direct, instead of indirect, taxation transferred to our shoulders that burden which ought to be borne by the foreign producer.

Sir **Francis S. Powell**, Bart., M.P., said the speech of Sir Guilford Molesworth was a consoling speech, because it showed that the optimistic feeling of the author of the paper was not without its antidote. His own sympathies were with the reader of the paper rather than with the gloomy tone of Sir Guilford Molesworth. The figures as to pauperism, issued only a few days previously, by no means showed a growth of poverty. The paper being "A Financial Retrospect," dealt rather with the past than with the present, and he fully sympathised with Sir Robert Giffen in deprecating political discussion at a meeting of that class. They were dealing with cold statistics, and they looked forward to the future not with a view to expressing an opinion as to the wisdom of a policy, but in order to fix their minds upon the inevitable—a future which no discussion could alter, and which appeared to be governed by the circumstances of the times in which they were living. Whether this policy were wise or foolish, there could be no question that it must lead to a considerably increased expenditure, both upon the Army and upon the Navy, for some years to come. He did not think that a statistician, dealing with the question from a statistician's point of view, would act wisely if he ignored what he regarded as the elementary facts of the situation. It was impossible to master all the author's figures at one effort; but he thought it also impossible to hear such a paper read without feeling the great blessings which had resulted to this country from a liberal financial policy. He certainly hoped that we should never go back to Protection in any form whatever. Upon this question fallacies were beginning to pass current as truths, and the time had come when these errors should be eliminated by careful and full discussion. The danger to Free Trade was in silence, not in debate. He was always glad on occasions of this kind to hear remarks which would cause people to think and to express the conclusions they had reached.

Mr. H. BIRCHENOUGH spoke of the great obligation, not only of that Society, but also, he thought, of the public at large, to Sir Robert Giffen for his exceedingly luminous paper. One of the most valuable points which Sir Robert had made was his bringing out in so very clear a manner the exceedingly narrow basis—in his opinion the dangerously narrow basis—on which our system of taxation rested. In this country we had rather an evil habit of building large superstructures upon very narrow bases. Our system of credit, for example, rested on the very narrow basis of the reserve of gold in the Bank of England; our military system rested on the narrow basis of voluntary enlistment; and our system of taxation rested on the narrow basis of drink and tobacco, the income tax and the death duties. Out of the whole revenue raised we derived 40 million £ a year from the income tax and the death duties, and 50 million £ from drink and tobacco, in all 90 million £ from these limited and exhaustible sources. He did not know the exact difference between a political and an economic discussion, and he thought it difficult to discuss economic questions of this kind, which were also practical questions, without touching upon political controversy. It was obvious that the war, and still more the great changes in the international position, had brought entirely new factors into the financial situation. Money had to be found in one way or another to meet our national obligations. It had been easy to raise 60 million or 70 million £ a year by direct taxation, but it was a very different matter when they had to raise something in the neighbourhood of 150 million £. As Sir Francis Powell had very properly said, the Free Trader did not deprecate discussion. He was himself a Free Trader, but at the same time he thought the Free Traders had their fallacies, exactly as Protectionists had theirs. One of the delusions which a previous generation had entertained was the conviction that any indirect tax was in itself a bad tax. He was not sure that delusion was not largely nurtured and maintained by the merchant class. In future Chancellors of the Exchequer would be faced by the problem how to raise the immense sum of 150 million £ a year. They could not possibly confine themselves to sources which were practically exhausted, and would be driven by the necessities of the situation to seek a very much wider basis of taxation than that to which they had hitherto been accustomed. There were many taxes which could be levied, and which would have to be levied in the course of the next two years, which would be technical breaches of Free Trade principles. He did not for one moment fear the exercise of such taxation. The sugar tax had already led the way, and he thought it was plain that similar taxes must follow this year upon commodities of various kinds. Their aim must be as far as possible to widen the basis of taxation without inflicting any serious injury on the trade of the country.

Major P. G. CRAIGIE thanked Sir Robert Giffen for acceding to the request to put clearly before them certain elementary facts which, in the light of the national position at this moment, it had seemed to many of his colleagues on the Council it would have been a dereliction of their statistical duty to have left disregarded. Sir Robert, in sharply contrasting the nation of 1861, and the taxes, the duties and the functions of Government which then obtained, with the nation as we knew it to-day, with its vaster population, its extending empire, its increasing responsibilities, and its still more largely-increasing wealth, had presented to them two pictures which they would, as statisticians, do very well to study in detail. He hoped they would go home from this discussion determined to look further into these suggested figures, and he thought he could promise Sir Robert Giffen that long before 1905 they would have many fiscal debates, not only at the meetings of that Society, but throughout the country, as the immense changes in their position became recognised. The views that would be taken and the opinions that would be expressed as to the resultant action were by no means likely to be identical or unanimous; but it was their business, as men of figures, to see that they had got all the factors clearly set out. Whether Sir Robert was right in his method of selecting particular years rather than groups of years for measuring the growth of taxation was a matter open, as he would himself admit, to statistical argument. He would, too, have liked for his own part to have brought the parallel pressure of local taxation more directly into account. But where the change was so large as this, and the contrasts themselves were so huge, the qualifying difference between any one year, or any two or three years, might be masked in the broad general effect of the figures presented.

There was no doubt that the functions which Government had assumed at the present time were entirely different from the narrow conceptions of Government which prevailed some forty or fifty years ago. That in itself was a justification for re-discussing the whole question of the basis of taxation. Again, on the question to which Mr. Shaw Lefevre had especially directed attention, namely, the growth of naval expenditure, no one who had inquired into and realised the real facts behind these big figures could doubt that, comparing relative cost with relative force, the cost of warlike material and of the necessity of national defence had largely enhanced. Ships and guns, and even men, all cost individually far more than they had done forty years previously. If they were going to protect their country at all, they must expect a normally larger expenditure. The cold dry light of the figures before them left no alternative, whatever questions of policy might be involved. The question for statisticians to discuss was not policy but fact, but it was a further duty both for the politician and the statistician to see how the burden of taxation might be fitted to the back of the taxpayer. Certain measurements of the breadth of national back were laid before them now, and they had to see whether those were true measurements, and whether there had not been, as suggested, a slipping on one side of the burden, which could be carried with ease if adjusted fairly on each shoulder. If the contrasts now before them were correct, the nation and the empire could stand the taxation threatened. It was not so much its magnitude, as they must all agree, that need frighten them, but rather the question whether the pressure of that taxation should be spread over a wider or narrower section of the community.

Mr. **Cedric Erlund** said he had quite recently returned from an extended trip through most of the important countries of the world, in the course of which he had had the opportunity of meeting a very large number of the leaders of commerce, and the interesting paper which Sir Robert Giffen had read seemed to him to be in the nature of a foundation from which to build up certain conclusions, having in view what was occurring to-day and what would be happening to-morrow. He did not believe that industry in Germany was at all as depressed and stagnant as was supposed by those who had only superficial knowledge of the prevailing conditions. The difficulty largely arose from their antiquated system of banking, which caused delay in the transfer of credits. Only actual cash was used in the commerce of the country, and so from nine to fifteen times as much cash was required there as was the case in England, in the United States, or in the British Colonies. This stringency caused the present lack of competition on their part with our manufactures; but that state of things could not long continue, and therefore far keener competition from Germany might be expected in the near future. From the United States they must also expect far greater competition. Great syndicates were making arrangements to acquire a large proportion of our mercantile marine, to be reinforced by vessels now being built on the other side of the Atlantic, for the purpose of transporting their manufactured products, such as cotton, iron, and steel, not only to the continent, but even to carry cotton to Manchester. The intention was to get the great bulk of our exports by substituting American for British coal in these ships—five-sixths of our entire weight of exports being in coal—and to introduce the more highly finished products on the top of that. In his judgment, looking to the future, the resources of the country must be protected,—not using the word protection in its anti-Free Trade sense. If they were to meet the present or increased expenditures, it should be the policy of whatever Government might be in power to give the colonies every possible means of developing themselves by a freer interchange of trade with other colonies and with the home country by taxing foreign goods. Only in that way could the prosperity of the Empire and its ability to meet its increasing burdens be maintained.

Sir ROBERT GIFFEN, in reply, said he did not think there was much in the discussion that called for observation, especially as upon some of the points raised he had already had the opportunity of saying a great deal before this paper was prepared. Mr. Shaw Lefevre ought not to have spoken of him as an "advocate" of a large military and naval expenditure. He was undoubtedly in favour of an increase, but he was not an "advocate" in the ordinary sense of the word. It was unavoidable in his view that further expenditure should be incurred, but the necessity was an unpleasant one, as he had stated in the paper. What he wished our public men to do was to look into the matter deliberately and carefully, and with proper regard to economy, and see what they must do, whether they liked it or not, instead of waiting till circumstances forced them, when the work was certain to be done badly and at an excessive cost. That was really the whole effect of what he had said about a probable increase in the military expenditure. Mr Shaw Lefevre had dwelt much on what was called the ordinary as distinguished from the extraordinary expenditure, representing that he (Sir R. Giffen) was in favour of increasing the ordinary expenditure. But the distinction which was now made in respect of the Army between the ordinary expenditure and the so-called war expenditure, was altogether improper and unjustified, and he (Sir R. Giffen) had refused to recognise the distinction, and had spoken of the two together as not likely to diminish greatly from the present total. We were in the habit of criticising such distinctions when they appeared in the budgets of foreign nations. We had to face the expenditure, and what applied to foreign States applied to ourselves; and whether we called it ordinary or extraordinary, it did not make much difference. He maintained that, taking the present figure of expenditure at about 180 million £ upon the estimates of the current year, it was not a figure in respect of which, as wise and prudent men, they could look forward to any great reduction at a very early period, or one below the total of 150 million £ he had mentioned. He might be quite wrong in the view he took of the South African occupation, and of the international position; but what he was anxious for was that the subject should be discussed, and that public men should really face the situation, and discuss the facts as they were. They ought to lay before the country the true conditions of the international position, and explain what provision ought to be made. When that was done, he had no doubt we should have the figures of which he had spoken, but without its being done there was no use declaiming against high expenditure. There had been many discussions regarding the expenditure upon the Army and the Navy in his time; but he could not remember one in which the position was really faced, and the country was told the substantial truth as to the exigencies of the international position, and what would really have to be done. Mr. Shaw Lefevre said he recollected, as he (Sir R. Giffen) recollected, the feeling which prevailed in Parliament against what was thought to be high taxation. It was for that reason amongst others that he (Sir R. Giffen) had referred to the famous debate on Mr. Stansfeld's resolution in 1862, because events had immediately proved quite conclusively that all the talk about excessive expenditure and excessive taxation at that time was in the air: there was nothing excessive in the taxation, because in the next ten years the country was in so prosperous a condition that the revenue grew by leaps and bounds, and enabled the Government to dispense with a great many of the so-called excessive taxes. He was not quite sure but that the neglect of our public men in past times to look into the facts of the international position, and to prepare the country, as they ought to have done, for the fulfilment of its international duties, had not resulted really in a very great loss to the country. He agreed with what Mr. Birchenough had said as to the disposition of people in this country to carry on business on too small a foundation, and thought the illustrations which he had given were very much to the point. He remembered a remark which was made privately to him by a distinguished officer three years previously, before the South African war broke out, namely, that we were working our army on a high-pressure system, which would not answer. The South African war had proved this only too conclusively. That high-pressure system had been the cause of much loss of life, and a great deal of our indirect losses in *prestige* and otherwise. We must look into Army and Navy matters closely now, and see that this high-pressure system was relieved. It was no doubt an omission in his paper that he had not dealt with local taxation: he could only express his regret that time did not enable him to do so. No doubt a paper like this should be regarded as merely preliminary, and he hoped that they would have a great many other discussions not merely about imperial, but about local finance also, and if he should have helped in any way to prepare the ground, he would have cause to regard this paper with some satisfaction.

The CHAIRMAN said it only remained for him, as he was sure all would wish, to move a cordial vote of thanks to Sir Robert Giffen for having given them so excellent a paper.

MISCELLANEA.

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I.—*Prices of Commodities in* 1901. By A. SAUERBECK.

THE table at the head of next page shows the course of prices of forty-five commodities during the last twenty years as compared with the standard period of eleven years, 1867-77, which in the aggregate is equivalent to the average of the twenty-five years 1853-77 (see the Society's *Journal*, 1886, pp. 592 and 648, and 1893, pp. 220 and 247).

The index number for all commodities was 70, against 75 in 1900, or 7 per cent. lower. It was 30 per cent. below the standard period 1867-77, and 11½ per cent. below the ten years 1878-87, but 6 per cent. *above* the average of the last ten years. As compared with 1896, the lowest year on record, the rise amounted still to 15 per cent.

The fall last year was mainly due to minerals and textiles, to sugar, coffee, and tea. Corn, meat, and sundry materials were on the average practically the same, slightly lower prices for wheat, rice, beef, and mutton having been balanced by higher prices for maize, oats, pork, and butter.

The monthly fluctuations were as follows:—

December,	1889....	73·7	July,	1900....	76·2	June,	1901....	69·8
February,	'95....	60·0	December,	„	73·4	July,	„	69·5
July,	'96....	59·2	January,	1901....	72·2	August,	„	69·8
December,	'96....	62·0	February,	„	71·7	September,	„	69·6
„	'97....	62·4	March,	„	71·0	October,	„	69·6
„	'98....	63·8	April,	„	70·6	November,	„	69·0
„	'99....	72·3	May,	„	70·5	December,	„	68·4

Summary of Index Numbers. Groups of Articles, 1867-77 = 100.

	Vegetable Food (Corn, &c.).	Animal Food (Meat, &c.).	Sugar, Coffee, and Tea.	Total Food.	Minerals.	Textiles.	Sundry Materials.	Total Materials.	Grand Total.	Silver.*	Wheat Harvest.†	Average Price of Consols.‡	Average Bank of England Rate.‡
882 ……..	84	104	76	89	79	73	85	80	84	84·9	100	100½	4⅛
'83 ……..	82	103	77	89	76	70	84	77	82	83·1	93	101 3/16	3 9/10
'84 ……..	71	97	63	79	68	68	81	73	76	83·3	103	101	3
'85 ……..	68	88	63	74	66	65	76	70	72	79·9	108	99¼	3
'86 ……..	65	87	60	72	67	63	69	67	69	74·6	93	100¾	3
887 ……..	64	79	67	70	69	65	67	67	68	73·3	110	101¾	3 3/10
'88 ……..	67	82	65	72	78	64	67	69	70	70·4	96	101	3 3/10
'89 ……..	65	86	75	75	75	70	68	70	72	70·2	103	98	3 6/10
'90 ……..	65	82	70	73	80	66	69	71	72	78·4	106	96½	4 5/10
'91 ……..	75	81	71	77	76	59	69	68	72	74·1	108	95¾	3 3/10
892 ……..	65	84	69	73	71	57	67	65	68	65·4	91	96¾	2 5/10
'93 ……..	59	85	75	72	68	59	68	65	68	58·6	90	98½	3 1/10
'94 ……..	55	80	65	66	64	53	64	60	63	47·6	106	101	2 1/10
'95 ……..	54	78	62	64	62	52	65	60	62	49·1	91	106¼	2
'96 ……..	53	73	59	62	63	54	63	60	61	50·5	116	111	2 5/10
897 ……..	60	79	52	65	66	51	62	59	62	45·3	100	112¼	2 6/10
'98 ……..	67	77	51	68	70	51	63	61	64	44·3	120	111	3¼
'99 ……..	60	79	53	65	92	58	65	70	68	45·1	113	107	3¾
900 ……..	62	85	54	69	108	66	71	80	75	46·4	99	99½	4
'01 ……..	62	85	46	67	89	60	71	72	70	44·7	106	94	3¾
Average													
892–1901	60	80	59	67	75	56	66	65	66	49·7	103	103¾	3
'88–97….	62	81	66	70	70	59	66	65	67	61·0	101	101¾	2 9/10
'78–87….	79	95	76	84	73	71	81	76	79	82·1	97	99½	3 9/10

* Silver 60·84*d.* per oz. = 100.

† Wheat harvest in the United Kingdom, 1878-83, 28 bushels per acre = 100, from 1884, 29 bushels = 100.

‡ Consols and bank rate actual figures, not index numbers; consols 2¾ per cent. from 1889.

With the exception of a slight rally in August, the monthly number went steadily down, and stood at the end of the year 7 per cent. lower than in December, 1900.[1]

Taking articles of food and materials separately, the index numbers compare thus (1867-77 = 100) :—

	Average.			Dec., 1889.	Feb., 1895.	July, 1896.	Dec., 1899.	Feb., 1900.	Dec., 1900.	Dec., 1901.
	1878-87.	1888-97.	1892-1901.							
Food ……..	84	70	67	73·1	63·8	60·0	65·1	65·8	69·2	66·1
Materials	76	65	65	74·2	57·0	58·6	77·5	81·9	76·5	70·0

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[1] There has been a slight improvement since, viz., January, 1902, 68·8, and February, 68·9.

Articles of food were at the end of the year 4½ per cent., and materials 8½ per cent. lower than in December, 1900.

The position of the six separate groups of commodities at the end of the last three years in comparison with former periods, is illustrated by the following index numbers (1867-77 = 100) :—

	Average.			Dec., 1899.	Dec., 1900.	Dec., 1901.	Last Year, per Cent.
	1878-87.	1888-97.	1892-1901.				
Vegetable food, corn, &c.	79	62	60	58·7	62·6	63·2	rise 1
Animal food (meat and butter)	95	81	80	78·9	87·3	83·1	fall 5
Sugar, coffee, and tea	76	66	59	53·7	50·8	42·0	„ 18
Minerals	73	70	75	98·3	102·3	80·6	„ 21
Textiles........................	71	59	56	71·2	60·6	58·2	„ 4
Sundry materials........	81	66	66	68·8	71·5	71·8	rise ½

Corn experienced a rise for maize and oats, and a fall for rice and potatoes, while the fluctuations in wheat and barley were unimportant. In the second group, beef and mutton were lower, pork and butter on the average higher, but butter ruled at the end of the year lower than a twelvemonth ago. Sugar fell heavily, beet from 9*s.* 1*d.* to 6*s.* 6*d.*, Java from 12*s.* 9*d.* to 9*s.*, and French loaves from 13*s.* to 10*s.* 3*d.* per cwt., and the last-named prices were the lowest on record. Coffee was on the average also lower than in 1900, but whilst declining up to July, recovered considerably later on, and stood at the end higher than a year ago. The lower classes of tea were very depressed, and the average annual import price—7⅝*d.* per lb.—is the lowest on record. For metals generally the tendency was downward throughout the year. Scotch pig iron fell from 60*s.* to 49*s.*, hæmatite from 63*s.* 9*d.* to 55*s.* 5*d.* per ton, standard copper from 72¾*l.* to 48¾*l.*, lead from 16⅝*l.* to 10¾*l.* per ton. Tin had great fluctuations; it declined in the first quarter from 121½*l.* to 114*l.*, rose in July to 131*l.* and closed at 106*l.* per ton. Best house coal in London fell from 23*s.* in December, 1900, to 17*s.* in June, and rose again to 20*s.* 6*d.* per ton. The average export price of coal was 13*s.* 10*d.*, against 16*s.* 9*d.* in 1900. Among textiles, cotton had a gradual fall from 5½*d.* for middling American to $4\frac{9}{16}$*d.* per lb.; flax was high during the greater part of the year, but declined towards the end; jute and silk were lower at the end of the year, but Manila hemp rose from 29½*l.* in December, 1900, to 46*l.* per ton in December, 1901. Fine wool was firm, and nearly 10 per cent. higher at the end, but English and colonial coarse wool declined from 20 to 35 per cent., and the prices at the end of the year were the lowest on record—Lincoln hogs 7¾*d.* and wethers 4¾*d.* per lb. In the group of "sundry materials," hides and leather were well maintained, tallow and petroleum were higher at the end; linseed oil showed little change, and was still comparatively dear, but wood was cheaper.

*Quarterly Movements of Prices.**

Summary of Index Numbers, 1867-77 = 100.

Years.	Quarters.	Vegetable Food (Corn, &c.).	Animal Food (Meat, &c.).	Sugar, Coffee, and Tea.	Total Food.	Minerals.	Textiles.	Sundry Materials.	Total Materials.	Grand Total.	Silver.†
1889....	IV	66·3	86·0	67·2	73·1	83·9	70·7	68·1	73·2	73·2	71·4
'96	I	50·4	71·7	62·8	60·8	63·2	55·5	64·5	61·4	61·1	51·1
	II	49·2	71·4	61·2	59·9	62·4	53·7	62·8	59·9	59·9	51·4
	III	50·5	75·2	56·6	60·9	62·2	53·2	62·1	59·4	60·1	50·6
	IV	60·3	74·3	55·2	64·4	65·9	54·1	62·8	60·9	62·4	49·1
'97	I	57·5	77·3	55·2	64·3	65·8	52·0	62·5	60·2	61·9	48·0
	II	56·1	80·0	52·0	64·0	64·0	51·5	62·3	59·4	61·3	45·7
	III	62·1	80·1	51·0	66·4	65·4	51·1	63·2	60·1	62·8	41·5
	IV	65·0	78·4	50·3	66·8	66·7	48·8	62·3	59·3	62·5	44·7
'98	I	67·0	78·0	50·5	67·6	67·0	49·4	62·9	59·9	63·1	42·4
	II	76·2	75·0	50·4	70·3	69·2	52·4	64·5	62·1	65·5	44·1
	III	65·0	78·1	51·3	67·0	71·0	51·5	63·9	62·0	64·1	45·4
	IV	62·4	76·8	52·3	65·6	75·0	50·4	63·3	62·5	63·8	45·5
'99	I	61·4	78·8	53·2	66·0	83·7	52·8	62·6	65·3	65·6	45·1
	II	59·1	79·8	54·5	65·8	89·2	54·6	62·0	67·1	66·5	46·3
	III	59·4	79·6	53·7	65·6	96·3	57·5	64·4	70·9	68·6	44·9
	IV	59·6	77·4	53·6	64·8	98·8	68·7	68·7	76·8	71·8	44·5
1900	I	60·2	80·2	53·4	66·2	107·9	70·6	72·1	81·3	74·9	45·3
	II	62·3	87·5	55·0	70·0	108·6	65·4	71·4	79·6	75·6	45·6
	III	64·0	86·1	55·9	70·5	111·0	64·5	71·1	79·8	75·9	47·0
	IV	63·7	85·3	52·3	69·3	105·5	60·9	71·5	77·4	74·0	48·8
'01	I	62·5	87·4	48·6	68·7	94·0	60·3	70·6	73·7	71·6	45·7
	II	63·4	85·2	46·5	67·9	88·5	59·5	70·9	72·1	70·3	44·9
	III	61·5	85·8	43·8	66·7	86·7	59·6	71·1	71·7	69·6	44·3
	IV	62·3	84·1	42·3	66·1	83·9	58·2	72·2	71·0	69·0	42·6

* The four quarterly figures of each year do not in all cases exactly (in the decimals) agree with the annual averages, as the latter are partly calculated from revised figures. See also the Society's *Journal*, 1893, p. 221; 1895, p. 144; and 1900, p. 90.

† Silver 60·84*d.* per oz. = 100.

The quarterly numbers show the average of three monthly figures, and by thus eliminating minor fluctuations they give a more reliable comparison of the gradual changes of the various groups of commodities. Last year's figures indicate the gradual fall of food products, principally influenced by the third group (sugar, coffee, and tea), and also of materials generally, the latter ruled by the strong decline of minerals, and to a small extent by weaker prices of textiles, while sundry materials were slightly better in the second half of the year.

The following figures show in each case the average index numbers of all the forty-five commodities for ten years (see the dotted line in the diagram of the *Journal*, 1886, and also the *Journal*, 1893, p. 220); they give the best picture of the gradual movement of the *average* prices of *whole periods*, as the ordinary fluctuations are still further obliterated:—

1818–27 = 111	1878–87 = 79	1887–96 = 68
'28–37 = 93	'82–91 = 74	'88–97 = 67
'38–47 = 93	'83–92 = 72	'89–98 = 66
'48–57 = 89	'84–93 = 71	'90–99 = 66
'58–67 = 99	'85–94 = 69	'91–1900 = 66
'68–77 = 100	'86–95 = 68	'92–1901 = 66

Silver.—The average price was $27\frac{3}{16}$*d.* per ounce, against $28\frac{1}{4}$*d.* in 1900. It stood at $29\frac{9}{16}$*d.* per ounce (index number 48·6) at the end of 1900, and went gradually lower, realising about $28\frac{3}{8}$*d.* in the first quarter, $27\frac{3}{8}$*d.* in the second, and barely 27*d.* in the third quarter. It dropped more rapidly in November, and touched $24\frac{15}{16}$*d.* in December, closing at $25\frac{3}{4}$*d.* per ounce (index number 42·3).

From 1895 to 1899 silver was wanted in considerable quantities for currency purposes in Russia, and also in Spain, and the following figures show the amounts coined (high standard coins only, viz., 1, ½, and ¼ roubles, and 5-peseta pieces, as minor coins were mostly struck from old silver pieces):—

	Coinage of Silver in	
	Russia.	Spain.
	Mln. roubles.	Mln. pesetas.
1895	4·6	6·9
'96	39·9	16·2
'97	67·9	30·9
'98	37·7	65·1
'99	37·2	204·9
1900	5·3	—
	192·6	324

Converting these into fine ounces at 277·7 grains per rouble, and 347 grains per 5-peseta piece, the requirements compare as follows with the estimated production of silver:—

	Production.	Coinage of Russia and Spain.	Percentage of Total Production.	Average Price of Silver.
	Mln. oz. fine.	Mln. oz. fine.		*d.* per oz. standard.
1895	167·5	3·7	2·2	$29\frac{7}{8}$
'96	157·1	25·4	16·1	$30\frac{1}{4}$
'97	160·4	43·8	27·3	$27\frac{9}{16}$
'98	173·2	31·1	18·0	$26\frac{15}{16}$
'99	167·2	51·1	30·6	$27\frac{7}{16}$
1900	178·8	3·1	1·7	$28\frac{1}{4}$

It will be seen that during the four years 1896-99 the two countries absorbed between 16 and 30 per cent. of the total production. In 1900 the coinage of silver in Russia was very small, and the quantity taken in 1901 was also quite unimportant, while in Spain the coinage of 5-peseta pieces has been entirely stopped. From 1900 to 1901 we had, on the other hand, the great currency demand for India, where the net amount coined (withdrawn pieces deducted) reached about 150 million rupees during the financial year, equal to 51½ million fine ounces, being nearly 30 per cent. of the total silver production of the world. This demand ceased in April, but the quantity of silver exported to India for other purposes remained on a large scale.

It may be useful to compare these figures, as no *extra* demand of any importance for coinage purposes can now be expected, all countries with an effective or nominal gold standard having much greater stocks of silver than they require, particularly the United States, France, Spain, Belgium, Italy, Holland, Germany, and Austria. The production of silver has therefore to depend solely on the industrial demand, on the coinage of tokens, and on the absorption by India and China.

Gold.—The production was as follows during the last few years, according to the Director of the Mint at Washington:—

	Kilos. Fine. or	Million Ounces Fine and Decimals.	Value.
			£
1895	299,100	9·62	40,800,000
'96	304,300	9·78	41,600,000
'97	355,200	11·42	48,500,000
'98	431,200	13·86	58,900,000
'99	461,300	14·83	63,000,000
1900	387,500	12·46	52,900,000

No reliable estimate for 1901 will be available for some time, but it is probable that the production was a little larger than in 1900.

The *rate of discount* in the three principal markets is shown in the following table:—

[Per cent. and two decimals.]

	London.		Paris.		Berlin.		Average of the Three Markets.	
	Bank Rate.	Market Rate.	Bank Rate.	Market Rate.	Bank Rate.	Market Rate.	Bank Rate.	Market Rate.
	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.
1895	2·00	0·80	2·10	1·59	3·14	2·02	2·41	1·47
'96	2·50	1·40	2·00	1·75	3·66	2·99	2·72	2·05
'97	2·60	1·80	2·00	1·81	3·81	3·08	2·80	2·23
'98	3·25	2·60	2·20	2·07	4·27	3·56	3·24	2·74
'99	3·75	3·25	3·06	2·96	5·04	4·45	3·95	3·55
1900	4·00	3·70	3·25	3·08	5·33	4·41	4·19	3·73
'01	3·75	3·14	3·00	2·48	4·10	3·06	3·62	2·88

The average rates in 1895 were the lowest on record, those in 1900 were the highest since 1873. Last year's average shows a very considerable reduction, the private rate having fallen from 3¾ per cent. to 2⅞ per cent.

The *past year* differed widely from its two predecessors. The great trade activity in Europe had received a check in the second half of 1900, which made further progress in 1901, and caused depression in many branches. There were certain occurrences which had a more or less unfavourable influence, such as the death of the Queen in January, the continuation of the war in South Africa, with its great expenditure, resulting in increased taxation, and the difficulties in China, now fortunately settled, but the main factor was the natural reaction from a period of great buoyancy. This reaction was particularly felt in the country that had experienced the greatest development during the last decade—Germany.

The export trade of the United Kingdom showed a decline, though not a very important one, everything considered. The out-turn of the shipbuilding yards was still very large, but the engineering industries were, on the whole, in a less favourable position. The cotton, flax, and silk industries were unsatisfactory; the fine wool industry was busy, though profits were not great, but the trade in coarse wools was very depressed. The wheat harvest in several European countries was smaller, but large in the United States, while the failure of the maize crop in the latter country raised prices of feeding stuffs. The sugar and coffee crops were of unprecedented magnitude and seriously affected values. Wages are declining in several branches, and the number of unemployed has increased everywhere.

Unlike European countries, the United States enjoyed continued prosperity, leading to a further great boom in railway and industrial shares; but matters there have now reached such a height that the position is not free from danger.

It is not improbable that the present year will again see some improvement, but we must not expect too much. Liquidation will still go on in those countries, and trades which have suffered most, and when all the losses are ascertained, confidence will probably return, and this will lead to renewed activity. If the South African war should at last be concluded, and the working of the mines, now partly opened, become again more normal, it may, as is generally expected, have a great influence on trade; but it may also be that the effect will not be so great as might have been the case in 1900 or even in 1901. The boom is over, and experience teaches us that it always takes some time, often years, before a new period of great activity recommences.

The arithmetical mean of the forty-five index numbers, which is 70 (against 75 in 1900), has, as in former years, again been subjected to two tests:—

Firstly, by using the same index numbers of the separate articles, but calculating each article according to its importance in the United Kingdom on the average of the three years 1894-96, when the mean for 1901 is 69·8, against 76·0 in 1900, and 67·0 in 1899; or, on the average of the five years 1871-75, when the mean for 1901 is 69·5, against 75·3 in 1900 and 66·3 in 1899.

Secondly, by calculating the quantities in the United Kingdom at their actual values (the production on the basis of my price tables, the imports at Board of Trade values, and consequently a considerable portion according to a different set of prices) and at the nominal values on the basis of the average prices from 1867-77. In this case the mean is 72·1, against 78·3 in 1900 and 67·3 in 1899. The figures for 1900 and 1901 are higher in this calculation than the ordinary index numbers, and this is principally due to the high export price of coal—an article of such enormous importance in this country—but partly also to the declared values of imports having been higher than those afterwards realised.

The following table gives the figures which have served for the second test (see also the Society's *Journal*, 1886, pp. 613—19):—

Movements of Forty-five Commodities in the United Kingdom (Production and Imports).

	Estimated Actual Value in each Period.	Nominal Values at Average Prices of 1867-77, showing Increase in Quantities.	Movement of Quantities,		Movement of Quantities from Period to Period.	Ratio of Prices according to this Table, 1867-77 = 100.
			1848-50 = 100.	1871-75 = 100.		
	Mln. £'s and dec.	Mln. £'s and dec.				
Avge. 1848-50...	219·8	294·8	100	56	—	74·6
" '59-61....	350·1	382·7	130	73	30% over 1849	91·5
" '69-71....	456·6	484·6	164	92	27% " '60	94·2
" '71-75....	548·8	526·3	178	100	—	104·3
" '74-76....	537·8	538·4	183	102	—	99·9
" '79-81....	489·7	578·5	196	110	19% over 1870	84·6
" '84-86....	445·7	610·1	207	116	—	73·0
" '89-91....	504·1	685·2	233	130	18% over 1880	73·6
" '94-96....	453·7	723·5	245	137	—	62·7
1898....................	498·7	772·4	262	147	—	64·6
'99....................	519·8	772·5	262	147	13% over 1890........	67·3
1900....................	599·5	765·3	260	145		78·3
'01*	570·2	791·1	268	150		72·1

* 1901 subject to correction after publication of the complete mineral produce returns.

The nominal values at the uniform prices of 1867-77 show the exact movements of quantities in the aggregate. After a falling off in quantities in 1900, there was again an increase last year. The last three years, taken on the average, show an increase of about 13 per cent. on 1890, 47 per cent. on 1871-75, and 163 per cent. on 1848-50.

The price movements of the *external* trade of this country—total imports into the United Kingdom and exports of British and Irish produce—were as follows, 1873 called 111 in accordance with my index number (see the Society's *Journal*, 1897, p. 187):—

	Total Imports into United Kingdom and Exports of British and Irish Produce.			Ratios 1873 = 111.	
	Declared Value.	Value at Prices of Preceding Year.	Values at Prices in 1873.	British Trade.	My Arithmetical Index Numbers.
	Mln. £'s.	Mln. £'s.	Mln. £'s.		
1873	626·0	—	626	111·0	111
'89	675·3	664·5	1,005	74·6	72
'97	685·6	689·5	1,176	64·7	62
'98	704·0	703·1	1,201	64·8	64
'99	749·7	724·7	1,241	67·1	68
1900	815·1	739·1	1,224	73·9	75
'01	802·7	836·9	1,256	70·9	70

The total declared value last year was 1½ per cent. less than in the preceding year, but the total quantity, as illustrated by the third column—values at prices in 1873—was 2¾ per cent. larger. It will be observed that since 1873 quantities have doubled, while the actual value is only 28 per cent. larger. The index number in this table is only reduced by 3 points, or about 4 per cent., against 5 points in the case of the ordinary arithmetical index number. As pointed out last year, the influence of the great commodity coal is much less in this table, which contains only the exports—about 44 million tons—than in the preceding calculations, where the total production—say, 225 million tons—is included.

Construction of the Tables.

The Table of *Index Numbers* is based on the average prices of the eleven years 1867-77, and the index numbers have been calculated in the ordinary arithmetical way; for instance, English wheat:—

	s.	*d.*	
Average, 1867-77....	54	6	= 100, average point.
„ '55	74	8	= 137, or 37 per cent. above the average point.
„ 1901	26	9	= 49, „ 51 „ below „

The index numbers therefore represent simple percentages of the average point.

Certain articles which appear to have something in common have been grouped together, with the following result:—

		Example for 1901.	
		Total Numbers.	Average.
1. Vegetable food, corn, &c. (wheat, flour, barley, oats, maize, potatoes, and rice)	With 8 Index Nos.	498	62
2. Animal food (beef, mutton, pork, bacon, and butter)	„ 7 „	596	85
3. Sugar, coffee, and tea	„ 4 „	183	46
1—3. *Food*	„ 19 „	1,277	67
4. Minerals (iron, copper, tin, lead, and coal)	„ 7 „	621	89
5. Textiles (cotton, flax, hemp, jute, wool, and silk)	„ 8 „	478	60
6. Sundry materials (hides, leather, tallow, oils, soda, nitrate, indigo, and timber)	„ 11 „	782	71
4—6. *Materials*..........	„ 26 „	1,881	72
General average	„ 45 „	3,158	70

The *general average* is drawn from all forty-five descriptions, which are treated as of equal value, and is the simple arithmetical mean as shown above.

*Average Prices of Commodities.**

No. of Article	0	1	2	3	4	5	6	7	8	1—8	9
		Wheat.		Flour.	Barley.	Oats.	Maize.	Potatoes.*	Rice.		Beef‡
Year.	Silver.†	English Gazette.	American.	Town Made White.	English Gazette.	English Gazette.	American Mixed.	Good English.	Rangoon Cargoes to Arrive.	Vegetable Food. Total.	Prime.
	d. per oz.	*s.* and *d.* per qr.	*s.* and *d.* per qr.	*s.* per sack (280 lbs.).	*s.* and *d.* per qr.	*s.* and *d.* per qr.	*s.* per qr.	*s.* per ton	*s.* and *d.* per cwt.		*d.* per 8 lbs.
1887	44⅝	32·6	34	28	25·4	16·3	21¼	85	6·10	—	43
'88	42⅞	31·10	37	30	27·10	16·9	23½	80	7·1	—	48
'89	42 11/16	29·9	35	29	25·10	17·9	20	80	7·3	—	47
'90	47 11/16	31·11	35·6	29	28·8	18·7	20	70	7·3	—	47
'91	45 1/16	37	40	33	28·2	20	28	92	7·11	—	47
1892	39 13/16	30·3	33	28	26·2	19·10	21¾	70	7·8	—	47
'93	35⅝	26·4	27·6	26	25·7	18·9	20	65	6·2	—	48
'94	28 15/16	22·10	23·6	22	24·6	17·1	20	70	5·10	—	47
'95	29⅞	23·1	25·6	23	21·11	14·6	19½	80	5·6	—	47
'96	30¾	26·2	29	25	22·11	14·9	15	55	6·2	—	45
1897	27 9/16	30·2	34·6	30	23·6	16·11	14¾	70	6·9	—	47
'98	26 15/16	34	37	33	27·2	18·5	17¾	82	7·2	—	46
'99	27 7/16	25·8	30	26½	25·7	17	18	70	7·2	—	49
1900	28¼	26·11	31½	27½	24·11	17·7	20¼	78	7·4	—	51
'01	27 3/16	26·9	30	26½	25·2	18·5	22¼	78	6·7	—	49
Average....											
1892–1901	30¼	27	30	26½	24½	17½	19	72	6⅝	—	47½
'88–97....	37	29	32	27½	25½	17½	20¼	73	6¾	—	47
'78-87....	50	40	43½	34½	31½	21	25	102	8	—	55½
'67–77....	58½	54½	56	46	39	26	32½	117	10	—	59

Index Numbers (or Percentages) of Prices, the Average of 1867-77 being 100.

Year.	0	1	2	3	4	5	6	7	8	1—8	9
1887	73·3	60	61	61	65	63	65	73	68	516	73
'88	70·4	58	66	65	71	64	72	69	71	536	81
'89	70·2	55	63	63	66	69	61	69	72	518	80
'90	78·4	59	63	63	73	72	61	60	72	523	80
'91	74·1	68	71	72	72	77	86	79	79	604	80
1892	65·4	56	59	61	67	76	67	60	77	523	80
'93	58·6	48	50	54	66	72	61	56	62	469	81
'94	47·6	41	42	48	63	66	61	60	58	439	80
'95	49·1	42	46	50	56	56	60	68	55	433	80
'96	50·5	48	52	54	59	57	46	47	62	425	76
1897	45·3	55	62	65	60	65	45	61	67	480	80
'98	44·3	62	66	72	70	71	55	70	72	538	78
'99	45·1	47	54	58	66	65	55	60	72	477	83
1900	46·4	49	56	60	64	68	62	67	73	499	86
'01	44·7	49	54	58	65	71	68	67	66	498	83

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* The annual prices are the averages of twelve monthly or fifty-two weekly quotations potatoes of eight monthly quotations, January to April and September to December.

† Index numbers of silver as compared with 60·84*d.* per ounce being the parity between gold and silver at 1 : 15½; not included in the general average.

‡ Meat (9—13), by the carcase, in the London meat market.

Average Prices of Commodities—Contd.

No. of Article }	10	11	12	13	14	15	9—15	16A	16B	17	18A*	18B*
	Beef.	Mutton.		Pork.	Bacon.	Butter.		Sugar.			Coffee.	
Year.	Mid-dling.	Prime.	Mid-dling.	Large and Small, Average.	Water-ford.	Fries-land, Fine to Finest.	Animal Food. Total.	British West Indian Refining.	Beet, German, 88 p. c., f.o.b.	Java, Floating Cargoes.	Ceylon Planta-tion, Low Mid-dling.	Rio, Good Channel.
	d. per 8 lbs.	*d.* per 8 lbs.	*d.* per 8 lbs.	*d.* per 8 lbs.	*s.* per cwt.	*s.* per cwt.		*s.* per cwt.	*s.* per cwt.	*s.* per cwt.	*s.* per cwt.	*s.* per cwt.
1887	36	52	42	43	61	103	—	11¾	12½	14½	90	78
'88	39	58	47	40	61	100	—	13	13¾	16	80	64
'89	39	63	50	43	66	102	—	16	16½	19	95	76
'90	38	59	45	42	62	100	—	13	12½	15¼	101	83
'91	40	53	42	39	63	106	—	13½	13½	15½	101	76
1892	38	53	42	48	68	108	—	13½	13¾	16	104	68
'93	39	53	42	50	68	106	—	14¼	15	17¼	103	81
'94	37	55	42	44	59	98	—	11¼	11¼	13¾	102	75
'95	37	58	44	37	54	98	—	10	10	12	98	74
'96	34	53	39	35	50	98	—	10¾	10½	12½	95	58
1897	36	55	41	44	59	94	—	9¼	8⅞	11	95	40
'98	36	52	37	45	58	95	—	9½	9½	11¾	92	32
'99	40	54	41	40	51	103	—	10½	10	12¼	90	31
1900	42	59	45	44	60	102	—	11¼	10½	12¾	75	40
'01	42	54	44	49	63	105	—	9¼	8½	10¾	70	35
Average 1892-1901	38	54½	41½	48½	59	100	—	11	10¾	13	92	53
'88-97....	37½	56	43½	42	61	100	—	12½	12½	14¾	97	70
'78-87....	46	64½	53	49	71	116	—	17	18	21½	78	52
'67-77....	50	63	55	52	74	125	—	23	24	28½	87	64

Index Numbers (or Percentages) of Prices, the Average of 1867-77 being 100.

											*	*
1887	72	83	76	83	82	82	551	52		51	104	122
'88	78	92	85	77	82	80	575	57		56	92	100
'89	78	100	91	83	89	82	603	69		67	109	119
'90	76	94	82	81	84	80	577	54		54	116	130
'91	80	84	76	75	85	85	565	57		54	116	119
1892	76	84	76	92	92	86	586	58		56	120	106
'93	78	84	76	96	92	85	592	62		61	118	127
'94	74	87	76	85	80	78	560	48		48	117	117
'95	74	92	80	71	73	74	544	43		42	113	116
'96	68	84	71	67	68	78	512	46		44	109	91
1897	72	87	75	85	80	75	554	39		39	109	64
'98	72	84	67	87	78	76	542	40		41	106	50
'99	80	86	75	77	69	82	552	44		43	103	48
1900	84	94	82	85	81	82	594	46		45	86	63
'01	84	86	80	94	85	84	596	38		38	80	55

* Index numbers not included in the general average.

Average Prices of Commodities—Contd.

No. of Article }	18	19A*	19B*	19	16—19	1—19	20	21	22	—	23
	Coffee.	Tea.			Sugar, Coffee, and Tea. Total.	Food. Total.	Iron.		Copper.		Tin.
Year.	Mean of 18A and 18B.	Congou, Common. *d.* per lb.	Average Import Price. *d.* and dec. per lb.	Mean of 19A and 19B.			Scotch Pig. *s.* and *d.* per ton	Bars, Common. £ per ton	Chili Bars. £ per ton	English Tough Cake. £ per ton	Straits. £ per t
1887	Prices, see preceding page, 18A and 18B.	5	10·58	—	—	—	42·3	4⅝	44	47	112
'88		4	10·99	—	—	—	39·11	4⅞	81	78	117
'89		4¼	10·79	—	—	—	47·9	6¼	51	54	93
'90		4½	10·65	—	—	—	49·7	6⅜	54	59	94
'91		5½	10·70	—	—	—	47·2	5⅝	51	55	91
1892		4⅞	10·07	—	—	—	41·10	5½	45	48	93
'93		5⅜	9·74	—	—	—	42·4	5	44	47	85
'94		4¼	9·59	—	—	—	42·8	4⅞	40	43	68
'95		4⅛	9·63	—	—	—	44·5	4⅞	43	46	63
'96		4	9·55	—	—	—	46·10	5	47	50	60
1897		4	9·36	—	—	—	45·4	5¼	49	52	62
'98		4½	9·13	—	—	—	47·2	5½	52	55	72
'99		5½	8·82	—	—	—	63·9	7¼	74	78	123
1900		5¼	8·58	—	—	—	69·4	9	73	77	134
'01		4	7·66	—	—	—	53·9	6½	66	71	118
Average....											
1892–1901		4⅝	9¼	—	—	—	50	5⅞	53	57	88
'88–97....		4½	10⅛	—	—	—	45	5⅜	50	53	83
'78–87....		6¾	12¾	—	—	—	46	5½	55	60	89
'67–77....		11¼	17¼	—	—	—	69	8¼	75	81	105
Index Numbers (or Percentages) of Prices, the Average of 1867-77 being 100.											
		*	*								
1887	113	44	62	53	269	1,336	61	56	59	—	107
'88	96	36	64	50	259	1,370	58	59	108	—	111
'89	114	38	63	50	300	1,421	69	76	68	—	89
'90	123	40	62	51	282	1,382	72	77	72	—	90
'91	118	49	62	56	285	1,454	68	68	68	—	87
1892	113	43	59	51	278	1,387	61	66	60	—	89
'93	123	48	57	53	299	1,360	61	61	59	—	81
'94	117	38	56	47	260	1,259	62	59	53	—	65
'95	115	37	56	47	247	1,224	64	59	57	—	60
'96	100	36	56	46	236	1,173	68	61	63	—	57
1897	86	36	54	45	209	1,243	66	64	65	—	59
'98	78	40	53	46	205	1,285	68	67	69	—	69
'99	75	49	51	50	212	1,241	92	88	99	—	117
1900	74	47	50	49	214	1,307	100	109	97	—	128
'01	67	36	44	40	183	1,277	78	79	88	—	112

* Index numbers not included in the general average.

Average Prices of Commodities—Contd.

No. of Article }	24	25	26	20—26	27	28	29A	29B	30A	30B	31
	Lead.	Coal.			Cotton.		Flax.		Hemp.		Jute.
Year.	English Pig.	Wallsend Hetton in London	Average Export Price.	Minerals. Total.	Middling American.	Fair Dhollerah.	St. Petersburg.	Russian, Average Import.	Manila Fair Roping.	St. Petersburg Clean.	Good Medium.
	£ per ton	s. per ton	s. and dec. per ton		d. per lb.	d. per lb.	£ per ton	£ per ton	£ per ton	£ per ton	£ per ton
1887	12 7/8	16	8·32	—	5 1/2	3 9/16	32	31 1/2	34	29	12 1/4
'88	13 7/8	16 1/2	8·41	—	5 9/16	3 7/8	29	28	37	26	13 1/4
'89	13	17 1/2	10·21	—	5 15/16	4 1/8	28	28	50	26	15
'90	13 1/4	19	12·62	—	6	3 15/16	27	26	39	26	13 1/4
'91	12 1/2	19	12·16	—	4 11/16	3 1/4	28	26	32	24	13
1892	10 5/8	18 1/2	11·04	—	4 3/16	3	28	26	28	24	15
'93	9 3/4	19 1/2	9·90	—	4 5/8	3 9/16	34	31 1/2	26	24	13
'94	9 5/8	16 1/2	10·50	—	3 13/16	2 5/8	32	33	22	24	12 1/2
'95	10 3/4	15	9·33	—	3 27/32	2 3/4	26	28	19	25	11
'96	11 1/2	15	8·85	—	4 11/32	3 3/32	26	27	17 1/2	25	12 1/4
1897	12 5/8	15 3/4	8·98	—	3 29/32	3 1/32	24 1/2	27	16	25	11
'98	13 1/4	16 3/4	9·92	—	3 5/16	2 1/2	24	25 1/2	27	25	11
'99	15 3/8	18 1/2	10·72	—	3 9/16	2 3/4	23	24 1/2	41	27	12 1/2
1900	17 1/4	23 1/2	16·75	—	5 15/32	4 3/16	35	30	39	28	14 1/4
'01	12 3/4	20	13·86	—	4 3/4	3 15/32	38	39 1/2	37	27	12 3/4
Average.... 1892-1901	12 1/4	18	11	—	4 3/16	3 1/8	29	29	27	25 1/2	12 1/2
'88-97....	12	17 1/4	10 1/4	—	4 11/16	3 5/16	28	28	28 1/2	25	13
'78-87....	14	16 3/4	9	—	6	4 1/4	33	34	35 1/2	26 1/2	15
'67-77....	20 1/2	22	12 1/2	—	9	6 3/4	46	48	43	35	19

Index Numbers (or Percentages) of Prices, the Average of 1867-77 being 100.

Year.	Lead.	Coal. Wallsend	Coal. Export	Minerals. Total.	Cotton. Middling	Cotton. Fair Dhollerah	Flax.	Hemp.	Jute.
1887	63	73	67	486	62	53	68	81	64
'88	68	75	67	546	62	58	61	81	70
'89	63	80	82	527	66	61	60	97	79
'90	65	86	101	563	67	58	56	82	70
'91	61	86	97	535	52	48	57	72	68
1892	52	84	88	500	46	45	57	67	79
'93	48	89	80	479	51	53	70	64	68
'94	47	75	84	445	42	39	69	59	66
'95	52	68	75	435	43	41	57	56	58
'96	56	68	71	444	48	46	56	55	64
1897	62	72	72	460	43	45	55	53	58
'98	65	76	79	493	37	37	52	67	58
'99	75	84	86	641	40	41	51	87	66
1900	84	107	134	759	61	62	69	86	75
'01	62	91	111	621	53	51	82	82	67

Average Prices of Commodities—Contd.

No. of Article	32A	32B	33	34	27—34	35A	35B	36	37A	37B	38
	Wool.			Silk.		Hides.		Leather.	Tallow.		Oil.
Year.	Merino, Port Phillip, Average Fleece.	Merino, Adelaide, Average Grease.	English, Lincoln Half Hogs.	Tsatlee.	Textiles. Total.	River Plate, Dry.	River Plate, Salted.	Crop Hides, 30-45 lbs.	St. Petersburg, Y.C.	Town.	Palm
	d. per lb.	*d.* per lb.	*d.* per lb.	*s.* per lb.		*d.* per lb.	*d.* per lb.	*d.* per lb.	*s.* per cwt.	*s.* per cwt.	£ per ton.
1887	15¾	7	10⅜	14½	—	7¾	6¼	15	31	24	22
'88	15¾	7	10⅜	13	—	6¾	4⅞	14	36	28	22
'89	17⅛	8¼	11	13½	—	6¼	5	13½	38	27	25
'90	16	7½	11	14	—	5¾	5½	13	38	26	27
'91	14¾	6⅞	9¾	13	—	5½	5⅛	13	40	27½	26
1892	13	6	8¾	12¼	—	5½	4⅝	13	45	27	24
'93	12¾	6	10¼	12½	—	5½	4⅞	13	48	30½	28
'94	11¾	5⅜	10⅛	10	—	5½	4¾	12½	48	25½	24½
'95	12	5⅝	12	10	—	7⅛	6¼	13½	48	23	23
'96	13	6⅜	11½	10½	—	6¾	5½	13½	48	21	22
1897	12¼	6	9⅝	10¼	—	6⅛	5½	13½	40	20	22
'98	13¼	6⅛	8¾	10½	—	7	6⅛	13½	40	22	23
'99	17¼	8½	8¼	13	—	7⅜	6¼	13½	—	25	25
1900	15¾	7⅞	7⅞	13	—	8⅛	6¼	14	—	27½	27½
'01	13	6⅜	6⅞	10½	—	7½	6	14	—	28	26
Average 1892–1901	13⅛	6½	9⅞	11¼	—	6¾	5⅝	13¼	43	25	24½
'88–97....	14	6½	10½	12	—	6½	5¼	13½	43	25½	24½
'78–87....	18½	8⅜	11¾	15	—	8⅛	6¾	15	41	35½	32½
'67–77....	21¼	9⅞	19¾	23	—	9	7	16	45	45	39

Index Numbers (or Percentages) of Prices, the Average of 1867-77 being 100.

Year	32A–32B	33	34	27—34	35A–35B	36	37A–37B	38
1887	72	54	68	517	88	94	61	56
'88	72	53	57	514	73	87	71	56
'89	82	56	59	560	70	84	72	64
'90	76	56	61	526	70	81	71	69
'91	70	49	57	473	66	81	75	67
1892	61	44	53	452	63	81	80	61
'93	60	52	54	472	65	81	87	72
'94	55	51	43	424	64	78	82	63
'95	57	61	43	416	84	84	79	59
'96	62	58	46	435	77	84	77	56
1897	59	49	45	407	75	84	67	56
'98	64	44	46	405	82	84	69	59
'99	83	42	57	467	85	84	56	64
1900	76	40	57	526	90	87	61	71
'01	62	35	46	478	84	87	62	67

Average Prices of Commodities—Contd.

No. of Article	39	40A	40B	41	42	43	44	45A	45B	35—45	20—45	1—45
	Oil.		Seeds.	Petroleum.*	Soda.		Indigo.	Timber.				
Year.	Olive.	Linseed.	Linseed.	Refined.	Crystals.	Nitrate of Soda.	Bengal, Good Consuming.	Hewn, Average Import.	Sawn or Split, Average Import.	Sundry Materials. Total.	Materials. Total.	Grand Total.
	£ per tun	£ per ton	*s.* per qr.	*d.* per gall.	*s.* per ton	*s.* per cwt.	*s.* per lb.	*s.* per load	*s.* per load			
1887	34	20½	38	5⅝	50	9½	4¾	38	42	—	—	—
'88	36	18½	39	6½	48	10	4¾	41	44	—	—	—
'89	35	20	42	5¾	51	9½	4½	47	49	—	—	—
'90	41	23	43	5½	61	8½	4¼	44	46	—	—	—
'91	43	21	42	5⅝	64	8¾	4¾	40	43	—	—	—
1892	36	18½	39	5	66	8¾	4½	40	44	—	—	—
'93	36	20½	42	4	58	9¼	5½	38	43	—	—	—
'94	35	20¼	38	3⅞	42	9¼	5	36	44	—	—	—
'95	36	20¼	37	6	39	8¼	4¼	37	42	—	—	—
'96	30	17½	33	5½	42	8	4¼	40	44	—	—	—
1897	31	15	33	4¾	51	7¾	4	41	47	—	—	—
'98	32	16¾	36	5⅛	54	7¾	3½	42	47	—	—	—
'99	33	20	40	6¼	56	7¾	3½	40	49	—	—	—
1900	36	30½	54	6¾	62	8	3½	41	56	—	—	—
'01	38	30	53	6½	65	9	3⅝	39	52	—	—	—
Average 1892–1901	34½	21	40	5⅜	53	8¼	4⅜	39½	47	—	—	—
'88–97....	36	19½	39	5¼	52	8¾	4½	40½	44½	—	—	—
'78–87....	40	23	46	6⅞	62	12½	6	47	47	—	—	—
'67–77....	50	30	60	12½*	92	14	7¼	60	54	—	—	—

Index Numbers (or Percentages) of Prices, the Average of 1867-77 being 100.

Year	39	40A–40B	41*	42	43	44	45A–45B	35—45	20—45	1—45
1887	68	65	45	54	68	66	70	735	1,738	3,074
'88	72	63	52	52	71	66	74	737	1,797	3,167
'89	70	69	46	55	68	62	84	744	1,831	3,252
'90	82	73	45	66	61	59	79	756	1,845	3,227
'91	86	70	45	70	63	66	73	762	1,770	3,224
1892	72	64	40	72	63	62	74	782	1,684	3,071
'93	72	69	32	62	66	76	71	753	1,704	3,064
'94	70	65	31	46	66	69	70	704	1,573	2,832
'95	72	64	48	42	59	59	69	719	1,570	2,794
'96	60	56	44	46	57	59	74	690	1,569	2,742
1897	62	53	38	56	55	55	77	678	1,545	2,788
'98	64	59	41	59	55	48	78	698	1,596	2,881
'99	66	67	50	61	55	48	78	714	1,822	3,063
1900	72	94	54	67	57	48	85	786	2,071	3,378
'01	76	92	52	71	64	47	80	782	1,881	3,158

* Petroleum as compared with the average from 1873-77 only.

II.—*The Statistics of Wages in the United Kingdom during the last Hundred Years.* (Part IX.) *Wages in the Worsted and Woollen Manufactures of the West Riding of Yorkshire.* By A. L. Bowley, M.A.

The Worsted and Woollen Manufacturers of Yorkshire are so entirely separate from those of the south-west of England and of Scotland, that, in spite of the early importance of the latter districts, it is best to treat Yorkshire by itself. The statistical history of wages in these industries teems with so many difficulties, and in so many ways must remain incomplete, that there was a great temptation to give up the endeavour of working the material into a shape that would make it comparable with the former papers of this series; but the indications that these wages have not followed the same or even a similar course to those of the Building Trades,[2] of Agricultural Labour,[3] or of Printing,[4] are so conclusive, and the actual changes following the introduction of the power loom and the machine comb, and other less revolutionary inventions, are so striking, that it was felt that the omission or curtailment of this inquiry would lead to a partial and erroneous view of the general course of wages in England. I have therefore grouped and averaged the figures as nearly in accordance with my former plan as possible, but have indicated the places where the evidence is incomplete and the resulting index numbers liable to errors, which further investigation may perhaps remove.

Worsted.

The main sources of information as to wages in the Bradford district are Porter's Tables, 1823-33, contained in the summary *Returns of Wages* (C. 5172 of 1887), and the further tables, 1855 to 1883, in the same Report, John James' *History of Worsted*, 1857, and Mr. H. S. Chapman's *Report in the Hand Loom Weavers' Commission* of 1838. These have been collated with the *Wage Census* of 1886, and I have supplemented the information by inquiries in the district in 1893 and 1901.

The great difficulty in obtaining averages lies, alike in the Worsted and Woollen industries, in the great diversity of conditions of employment, arising both from the variety of fabrics manufactured and from local peculiarities, and the absence of anything like a standard wage in most occupations. An almost equally important obstacle is the double use of the words *average wage*, which are sometimes taken to mean the average wage of an employee one week with another throughout a year, or a series of years, and at other times to mean the average wage of all those of a given occupation at a particular date, assuming full work. From this cause alone a discrepancy of 50 per cent. between two estimates, both given in good faith, is not at all uncommon. In this paper I have kept to my usual practice of stating all the wages in the tables as those which would be earned in a full week, without overtime or loss of time, leaving irregularity of work for a separate estimate, and have taken great care only to make comparisons between estimates which appeared to be based on uniform principles.

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[2] *Journal of the Royal Statistical Society*, June and September, 1900, and March, 1901.

[3] *Journal of the Royal Statistical Society*, December, 1898, and March, June, and September, 1899.

[4] *Journal of the Royal Statistical Society*, December, 1899.

Worsted. Bradford. *Statements of Wages*

	Proportionate numbers, 1823.	A	A	A	A	A	A	A	A	A	B	C	C
		1823.	'24.	'26.	'27.	'28.	'29.	'30.	'31.	'33.	'38.	'55–57.	'58.
Men.		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Wool sorters	5	21 - —	21 - 29 -	21 - 21 6	21 - 24 6	21 - 26 -	21 - 28 5	21 - 25 6	21 - 27 4	— 27 4	28 -	20 6	22 6
Washers' assistants	—	—	—	—	—	—	—	—	—	—	—	—	—
Washers	—	—	—	—	—	—	—	—	—	—	—	14 9	16 -
Dyers	—	—	—	—	—	—	—	—	—	—	—	15 -	—
Overlookers†	1	22 -	22 -	22 -	22 -	22 -	22 -	22 -	22 -	—	19 6	—	24 -
,, carding	—	—	27 -	30 -	30 -	32 -	32 -	32 -	32 6	27 -	—	—	—
,, combing	—	—	—	—	—	—	—	—	—	40 -	—	25 -	25 -
,, drawing	—	—	—	—	—	—	—	—	—	—	—	—	—
,, spinning	—	—	22 6	25 -	24 6	25 -	25 3	25 4	24 5	25 -	—	—	—
Preparers	—	—	—	—	—	—	—	—	—	—	—	—	—
Combers—													
Hand	36	12 2 —	12 7 16 10	12 - 12 2	12 8½ 13 6	12 10 14 -	12 10 12 6	13 7½ 13 5	13 8½ 14 1	— 16 2	14s. to 26s. 6d.	—	—
Machine	—	—	—	—	—	—	—	—	—	—	—	10 6	—
Warpdressers	—	—	—	—	—	—	—	—	—	—	—	—	—
Twisters-in	—	—	—	—	—	—	—	—	—	—	—	—	—
Packers	—	—	24 -	21 -	21 -	21 -	21 -	21 -	20 -	—	—	18 -	18 -
Warehousemen	1	—	—	—	—	—	—	—	—	22 -	—	20 -	21 -
Engine tenters	1	—	21 -	21 -	21 -	21 -	21 -	21 -	21 -	21 -	—	25 -	25 -
Stokers	—	—	—	—	—	—	—	—	—	—	—	13 6	—
Mechanics	1	—	27 2	26 9	27 8	27 4	25 6	24 8	24 9	25 -	—	—	24 -
Weavers.													
Power loom—													
Men	—	—	—	—	—	—	—	—	—	—	11 3	10 -	10 -
Women	—	—	—	—	—	—	—	—	—	—	—	10 6	10 6
Hand loom—													
Men (best workmen, when in full work)	—	21 6	21 6	16 6	18 -	17 6	17 6	15 6	15 6	15 -	10 6	—	—
Women.													
Preparers	5	—	8 9	8 2	7 6	7 9	7 9	7 10	8 -	8 -	—	—	—
Combers	—	—	—	—	—	—	—	—	—	—	—	—	—
Drawers	—	—	—	—	—	—	—	—	—	—	6s. 6d. to 7s.	—	7 9
Reelers	10	10 - —	12 11 8 -	9 4 6 8	9 4 7 4	9 8 8 -	8 7 6 6	8 7 7 3	8 7 7 9	— 7 9	8s. 5d. to 13s. 9d.	—	7 9
Winders	—	—	—	—	—	—	—	—	—	—	—	—	—
Warpers	—	12 -	12 -	12 -	12 -	12 -	12 -	10 6	10 6	—	—	—	—
Spinners—													
Women	—	—	—	—	—	—	—	—	—	—	6 6	7 9	—
Girls (full timers)	36‖	—	4 4	4 4	3 11	4 2	4 4	4 4	4 5	4 7‖		5 6¶	—

Paid for a Full Week's Work, from 1823 *to* 1901.

C	C	C	D	D	E	F	D	E	D	D	Proportionate numbers, 1886.	G	H	I
'60.	'61.	'63.	'66.	'67–68.	'71.	'72.	'74.	'76.	'77.	'83.		'86.	'91.	1901.
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.		s. d.	s. d.	s. d.
20 9	20 9	22 4	28 -	28 -	25 -	28 -	20s. to 25s.	27 -	31s. to 33s.	29s. to 32s.	7	28 4	30 -	—
—	—	—	—	—	—	—	—	—	—	16s. to 19s.	2	17 3	—	—
14 2	15 -	15 4	16 6	17 6	16 6	20 -	16s. to 18s.	22 -	17s. to 19s.	20s. to 25s.		20 5	—	—
20 -	20 -	20 -	18 -	20 -	16 6	17 -	23s. to 25s.	22 -	18s. to 26s.	—	2	19 5*	—	22 -††
26 4	26 4	27 8	35 -	30 -	29 -	—	32s. to 36s.	28s. to 38s.	29s. to 38s.	33s. to 35s.	3	31 4	—	—
—	—	—	—	—	—	37 6	—	—	—	32s. to 38s.	1	34 5	—	—
28 -	28 -	28 -	—	—	—	—	—	—	—	30s. to 42s.		34 8	-	—
—	—	—	—	—	—	—	—	—	—	30s. to 34s.		31 8	—	—
—	—	—	—	—	—	31 6	—	—	—	28s. to 32s.	2	28 11	—	—
—	—	—	—	—	—	—	—	17 -	—	14 6	1	14 10	—	—
11 3	11 3	11 3	—	—	—	—	—	—	—	—	—	—	—	—
10 3	10 3	10 6	14 -	15 -	—	17 -	16s. to 17s.	—	16 6	15 -	2	16 6	17 6	21 6
—	—	—	—	—	23 6	30 -	—	23 -	—	29 6	1	27 10	—	—
—	—	—	—	—	—	30 -	—	—	—	—	2	26 6	—	—
22 -	22 -	22 -	22 -	—	—	17 6	—	—	—	19s. to 28s.	1	18 10	—	—
17 9	17 9	18 6	17 -	20s. to 22s.	—	18 -	20s. to 23s.	—	—	—	1	21 9	—	—
27 8	27 8	23s. to 40s.	40 -	28s. to 35s.	—	—	30s. to 40s.	—	—	24s. to 40s.	1	32 4	—	---
—	—	—	20s. to 21s.	20 -	—	—	20s. to 22s.	—	—	21 6	1	21 9	—	—
23 9	23 9	25 -	29 -	28 -	—	31 6	30s. to 34s.	—	—	29s. to 31s 6d	3	28 10	—	—
13 9	13 9	14 9	18 -	—	—	24 -	20s. to 21s.	—	18s. to 22s.	14s. to 15s.	4	14 7	—	Coatings, 18s.
11 -	11 -	12 -	12 -	12 -	11 6	18 -	16s. to 18s.	15 6	14s. to 17s.	14s. to 15s.	50	13 9	12 9	Stuffs, 12s.6d
									Coatings, 18s.‡					
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	15 -	—	—	—	10 9	1	9 10	—	—
—	—	—	—	9 6	—	—	—	—	—	11s. to 13s 6d.	3	11 1	12 -	12 6
—	—	—	9 6	10s. to 12s.	9 9	11 6	11 6 12 -	11 3	10s.6d. to 11s.	9s. 6d. to 11s.6d.	7	10 3	—	—
—	—	—	13 -	10 -	11 -	—	15 - 16 -	10 -	12s. to 17.	12s. to 14s.	4	12 6	—	—
—	—	—	—	—	—	—	—	—	—	11 6 14 6	2	11 3	—	—
—	—	—	—	—	16 -	—	—	14 -	—	11 6 15 6	3	13 6	—	—
—	—	—	7s. to 10s.	—	8 3	9 6§	—	9 -	9s. 6d. to 11s.	9s. to 10s.6d.	10	9 -	—	9 -
—	—	—	—	—	—	—	10s. to 13s.	—	—	8 6	(11)	8 2	—	—

Notes to Bradford Table.

A. Porter's tables. Where two lines are given for the same occupation the figures relate to two different mills. The Baildon tables have not been used. Given in [C–5172], pp. 17—20.

B. Spinners' and weavers' wages are deduced from a letter from Mr. Mitchell to the Bradford Consul of the United States (*U.S.A. Consular Reports*, 1884). Others in this column are from James' *History of Worsted.*

C. *Returns of Wages* (C. 5172): averages of the statements.

D. *Returns of Wages* (C. 5172): as given, but with omissions.

E. From Bevan's *Industrial Classes and Industrial Statistics.*

F. From Edward Young's *Labour in Europe and America.*

G. The *Wage Census* of 1886.

H. Evidence given to the Labour Commission.

I. Special inquiry.

* Dyers, 1886. Average for the whole worsted district.

† Weaving overlookers are included in this line.

‡ From *U.S.A. Consular Reports.*

§ Edward Young gives 12*s.* as average for three sides (of spindles); the 9*s.* 6*d.* in the table was for the two sides then customary.

|| Till 1833 the spinners' wages are the average for all the children employed: see p. 108.

¶ Spinners (girls), 1857, from James' *History.*

†† Dyers in 1901. From *Yorkshire Factory Times*, 11th October, 1901.

Weavers.—The power loom was introduced in the Bradford trade in 1824,[5] but did not come rapidly into use. Hand looms were in the majority in 1836, but had nearly gone in 1846.[6]

There is a mass of conflicting evidence as to hand-loom weavers' earnings;[7] it seems certain that, at any rate from 1826, their work was very irregular, and their rate of pay fluctuating and diminishing. Arthur Young mentions 10*s.* as the weekly earnings in 1780, and this falls in line with the most comparable list given, that for thoroughly good weavers in full work.

Net Weekly Earnings of Good Adult Weavers in Full Work.

1780.		1800.	'04.	'14.	'15.	'20.	'22-24.	'26.	'27-29.	'30-33.	'38.
s. *d.*		*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
10 –	Fall and rise....	10 –	15 –	31 6	28 6	18 6	21 6	16 6	17 6	15 6	10 6

The ordinary weaver, on ordinary work, could only make 6*s.* 6*d.* per week in 1838, when lost time is taken into account. This list just given should be compared with the wages of the better class weaver of more recent times, perhaps with 15*s.* in 1901.

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[5] James' *History.*

[6] Mitchell, in *U.S.A. Consular Report.*

[7] Chapman's Report, *loc. cit.*

The generality of power-loom weavers in 1838 seem to have made 11*s.* or so, as much as the best hand-loom weavers, while good power weavers made 13*s.* Thus if we reduce the list just given by some 20 per cent. we make it comparable with later figures, for then both lines in the large table refer to the ordinary weaver.

It does not seem possible to make any useful estimate of the earnings of those hand-loom weavers, who were not full-grown men, nor have we any satisfactory estimate of their numbers. It would seem that weavers formed a very large proportion of all employed in the worsted industry. We have no sufficient information as to the relative number of men and women engaged on power looms till long after their introduction. In 1857 the weavers were mostly young women. In 1886 there was but one male to ten female weavers. In 1853 the rule was one loom, one weaver; but by 1861 there were three looms to two weavers on an average, and from about 1873 two looms per weaver has been general. The wages of men do not seem to differ much from those of women. For those dates at which much higher rates are given, it may be surmised that there were few of them on a good class of work.

In the *Wage Census* of 1886 we find that a small group of women earned about 17*s.* 6*d.*, two-thirds of all earned between 12*s.* 6*d.* and 15*s.*, while the average for all (for a 56½ hours week with no lost time) was 13*s.* 9*d.* Local labour leaders allege that the returns, which were voluntary, were on the whole from the better firms, but they admit an average of 13*s.* at that date.

A great controversy has raged round the statements made to the Labour Commission. Mr. Drew estimated that 11*s.* 9*d.* was the average for the whole worsted district for a full week, but that broken time brought it down to 9*s.* The Bradford Chamber of Commerce made a special investigation, and found a full week's average of 13*s.* 5*d.*, brought down by irregularity of work to 12*s.* Two employers stated that 12*s.* 8*d* and 14*s.* 6*d.* respectively had been averaged throughout the year in their mills. The special investigators for women's work for the Labour Commission give statements which indicate 13*s.* 10*d.* as the full week's wage, and 12*s.* 9*d.* when lost time is taken into account.

Mr. Drew explained that his average was intended to refer to stuffs, and not to include the better paid coatings. It is also said that again the returns, made voluntarily to the Chamber of Commerce, came from the better class employers, and were, for that reason, above the average.

Now, at that date there was no standard list (at present there is one in existence, but hardly in use); wages vary from mill to mill; the workers are very diverse in skill, and are dependent on good management and "tuning;" the kind of work has infinite variety; the wage census shows a range from 10*s.* to 18*s.*, and nowhere has the irregularity of work been more variable than in Bradford. It would have been wonderful if the statements of averages had been near agreement. The argument has also been much confused by the doubt as to whether the average was to be taken for the year, one week with another, or for a somewhat hypothetical full week's employment. The wage books of a firm of good reputation with the employees, which I was allowed to see last year, showed that 15*s*. 6*d*. was the weekly wage when all were busy, and over 100 were employed, but that it fell at other times to 12*s*., with only 70 workers. The average payment to those in work, week by week, was about 13*s*. 6*d*. from April, 1900, to August, 1901.

We may take it that the 13*s*. 5*d*. stated by the Chamber of Commerce in 1891 is comparable with the 13*s*. 9*d*. of the wage census, and with the previous returns, all of which come from similar sources, while Mr. Drew's statement may rightly be compared with the following from labour representatives in 1901:—On dress and stuffs, 12*s*. 6*d*. for a full week, 9*s*. 9*d*. averaged through the year; on coatings, 18*s*. for a full week, 13*s*. 6*d*. averaged through the year. The wage of 1891 is said to have been a little below that of 1886, while that of 1901 is above. Bradford people look back with pride and regret to the early seventies, when 20*s*. was considered a low wage.

The following table is consistent with the general trend of all the evidence, and may be taken as fairly reliable:—

Earnings on a Full Week's Weaving as Percentages of those of 1901.

	1780	1800	'04.	'14.	'15.	'20.	'22–4.	'26–9	'30–3.	'38.	'55–8.	'60–1.	'63–8.	'71	'72	'74.	76–7.	'83.	'86	'91.	1901
Power loom	—	—	—	—	—	—	—	—	—	90	85	90	95	95	145	135	125	115	105	95	100
Hand ,,	65	65	95	200	175	120	140	110	100	70	—	—	—	—	—	—	—	—	—	—	—

Spinners.—We have no comparable records of earnings when spinning was a cottage industry. Beginning with the 1823 returns, we find 1 overlooker at 22*s*. or 24*s*. to 30 or 40 children, of whom about one-third were under 12 years and received 2*s*. to 4*s*., one-third were between 12 and 14, at 4*s*. 6*d*. to 5*s*., and about one-third over 14, the rate increasing 6*d*. with every year, and the average for all being 4*s*. 4*d*. In 1833 there was 1 boy to 11 girls. From 1838 onwards the line is very loosely drawn between girls and women. In 1857 the spinners are described as chiefly women and young persons. In 1886 "girls" and "women" were earning at nearly the same rate, and we find in those mills which made returns, 156 overlookers at 28*s*. 11*d*.; 152 lads, 1,066 girls, 889 women as side-minders at from 8*s*. to 9*s*.; 854 doffers, lads and girls, at 7*s*. 9*d*.; 1,560 half-timers at 3*s*. In some of the tables full-timers are all described as women. It is clear that since 1833 the age of spinners minding sides has risen, as the number of spindles has increased, while numerous children are employed as doffers, &c., and not as actual spinners. In 1901 side-minders' wages were 8*s*. 6*d*., 9*s*. 6*d*., or 10*s*. 6*d*., according as 2, 3, or 4 sides were minded, 9*s*. being the average. The more recent figures all seem consistent and reliable.

Wool Combers.—Till 1848 combing was done by hand, chiefly in cottages, and combers seem to have been as numerous as spinning children. Between 1848 and 1860 machines came into use.[8] Women's wages first appear in 1867. Between 1883 and 1886, or near those dates, women greatly increased in number for day-work. In 1886 there were 10 women to 7 men. In 1891, or a little earlier, night shifts were introduced, and since then men have worked at night at the same machines as women by day. It is said that husband and wife not uncommonly work the same machine in this way. The temperature of the sheds is the subject of much complaint; there is often no fixed stop for meals at night. Women make 13*s.* in 56½ hours, men 21*s.* or 22*s.* in the full night week of 62 hours; it is said that they get four-thirds as much through the comb as women, and are consequently paid at nearly the same rate per piece. There is no dispute about the women's wage, but the men's work is very irregular, and they are said to average only 14*s.* per week through the year.

Woolsorters.—There is considerable doubt as to the recent movement of the average of woolsorters' wages. Rates of wages and regularity of work differ greatly for day-men and piece-men (Labour Commission Evidence). From the *Yorkshire Factory Times* (6th December, 1901), I learn that the conditions of work and pay fell off greatly before 1890. From the same source I find that there has been no general rise of wages for weaving overlookers since 1880.

It is interesting to compare Porters' tables for 1823 and 1833, with the wage census, 1886. I have separated out weavers, and reduced the total numbers of the remaining employees to 64 in each case. In 1886 I have counted two half-times at 3*s.* each as equivalent to one full timer at 6*s.* It is very curious to notice that the averages are practically the same at dates half-a-century apart. Men's wages have risen, and so have women's; but the increase of the numbers of the latter has kept the average down:—

	1823.			1833.				1886.		
	Proportionate Numbers.	Weekly Wages.		Proportionate Numbers.	Weekly Wages.			Proportionate Numbers.	Weekly Wages.	
Excluding weavers—		*s.*	*d.*		*s.*	*d.*	Excluding weavers—		*s.*	*d.*
Men	28	19	4	31	18	2	Men	15·5	24	7
Young women	9	8	6	7	8	–	Women	22·2	10	6
Boys	2	6	3	3	7	2	Boys	13	7	8
Children	25	4	4	23	4	7	Girls	13	8	–
Together	64	11	4	64	11	7		64	11	8
Best weavers	—	21	6	—	15	–	Weavers—			
							Men	31	13	9
							Women	3	14	7
							Overlookers	2	31	4
								36	14	9
							All together	100	12	10
Hours	Probably 70 or over							56½		

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[8] *U.S.A. Consular Reports, loc. cit.*

Index-numbers (Worsted).

From 1855 onwards the numbers are comparable and fairly reliable. The numbers before 1839 are much affected by the following assumptions and methods. Women working in their homes are left out of account. It is assumed that the ages of spinners have increased, so that before 1858 all were children who are not included in this estimate, while from 1858 to 1886 a gradually increasing number rank as young women. It is assumed thoughout, for want of definite information, that the weavers were 40 per cent. of the adults employed, this being near the

	'1823–4.	'26.	'27–31.	'33.	'38.	'55.	'58.
	s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
Men, excluding weavers	18 –	19 –	18 –	18 –	21 –	17 –	19 –
Weavers, allowing for change of sex	19 –	14 6	13 6	13 –	9 –	10 –	10 –
Women, excluding weavers	8 6	—	—	8 –	—	9 –	9 –
All males over 18, and females over 16 or 18... *Average as percentage of level in* 1901	*105*	*110*	*105*	*90*	*90*	**75**	**78**

Though most of these figures are based on statements relating to Bradford, it is not improbable that they would not be much affected by the inclusion of the rest of the worsted district (Halifax to Skipton), for the most important group, that of weavers, includes, at several dates, a wide area. The Index-numbers for *Halifax*, calculated on the same principle, but on less sufficient data, show :—

1866.	1867-68.	1877.	1880.	1886.
100	105	120	102	100

Wool.

In reality many different industries are grouped together under the heading Woollen Manufacture. In this paper three districts are dealt with: Leeds and its neighbourhood, Huddersfield, Batley and Dewsbury and district (the "Heavy Woollen District"). Only the more important branches of the woollen industry are included, and no figures relating to the blanket, rug, or shawl manufacture. Each of these three districts has its special manufacture (though a great variety is included in the Leeds district), and each has its special customs and processes. The information relating to them is drawn chiefly from the Hand Loom Weavers' Commission of 1838-40, from Baines's *Yorkshire*, proportion since 1855. Since the introduction of the power loom it is assumed that the proportion of women weavers has constantly increased, till now we have 12 women to 1 man. The bulk of the men who were not weavers were combers before 1850; whereas now women combers are in the majority. On these assumptions the proportion of women has increased from 15 per cent. in 1838 to 67 per cent. in 1886 of adults employed. The base taken is the wage stated in the wage census, and is that for a full week, whether 70 hours as in 1823, or 56½ as in 1901.

Allowing for all these assumptions, we have the following estimate for wages of adults in the worsted industry:—

'60–1.	'63.	'66–8.	'72.	'74.	'77.	'82.	'83.	'86.	'91.	'93.	1901.
s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
19 -	19 6	23 6	—	25 -	26 6	—	27 -	25 -	—	—	—
11 6	12 6	13 6	—	13 6	16 6	—	14 6	14 -	—	—	12 6
8 -	8 6	9 6	—	13 6	12 6	—	11 6	10 6	—	—	—
81	**86**	**98**	**(124)**	**115**	**112**	**(100)**	**108**	**100**	**100**	**100**	**100**

Past and Present, and from the same official sources as in the case of worsted, and has been supplemented by personal inquiries in Leeds, Batley, and Huddersfield in 1893 and 1901. On the whole the information is extensive and reliable; but there are many gaps which there seems no prospect of filling in, and some uncertainty attaches to special figures, and there are very great difficulties in working up the material.

LEEDS AND DISTRICT.—*Statements of Average Wages*

	A	B	B	C	B	D	B	B	F	B	H
	1795–96.	1805.	'15.	'24.	'25.	'30.	'35.	'38.	'39.	'45.	'55–57.
Men.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Wool sorters	—	31 1	37 1	—	27 3	—	26 9	25s. to 30s.	21 –	22 4	20 8
Washers	—	—	—	—	—	—	—	—	—	—	—
Dyers' foremen	—	—	—	—	30s. to 40s.	—	30s. to 70s.	—	—	30s. to 70s.	—
Dyers	—	—	—	—	16s. to 18s.	—	16s. to 18s.	—	22 –	16s. to 18s.	—
Slubbers	22 6	30 8	1816. 30 6	—	1827. 26 7	21 –	24 9	20s. to 32s.	24 –	29 6	24 –
Willyers	-	—	—	—	—	—	—	—	—	—	—
Scribblers' foremen	—	—	—	—	—	—	—	—	—	—	—
Scribblers	12s. to 21s.	—	—	—	—	—	—	—	—	—	—
Spinners	16 9	24 8	1815. 31 8	20s. to 25s.	1826. 20 4† 28 –	21 –	25 1	—	—	22 11	29 –
Warpers	—	—	—	—	—	—	—	—	—	—	—
Beamers	—	—	—	—	—	—	—	—	—	—	—
Fullers' foremen	—	—	26 –	—	1825. 30 –	—	30 –	—	—	—	—
Fullers	—	—	18 –	—	18 –	—	18 –	—	—	—	—
Dressers	12s. to 21s.	—	—	—	21s. to 22s.	21 –	20s. to 21s.	—	—	20s. to 21s 8d.	—
Tenterers	—	—	—	—	—	—	—	—	—	—	—
Press setters	—	—	—	—	—	—	—	—	20 –	—	—
Cutters or croppers	21s. to 30s.	—	—	—	—	—	—	—	—	—	—
Drawers	—	—	—	—	—	—	—	—	24 6	—	—
Engine tenters	—	—	—	—	—	—	—	—	—	—	—
Stokers	—	—	—	—	—	—	—	—	—	—	—
Carters	—	—	—	—	—	—	—	—	—	—	—
Warehousemen	-	—	—	—	—	—	—	—	21 –	—	—
Weaving.											
Tuners	—	—	—	—	—	—	—	—	—	—	—
Power loom—											
Men	—	—	—	—	—	—	11s. to 13s.	—	13 –	—	—
Women	—	—	—	—	—	—	9 –	—	—	9 –	8 3
Hand loom—											
Men in full work*	12 –	13 6	20s. to 24s.	20 –	30 –	18 –	—	12 –	12 –	14 –	—
Pattern designers	—	—	—	—	—	—	—	—	—	—	—
Pattern weavers	—	—	—	—	—	—	—	—	—	—	—
Women.											
Scribblers' feeders and condensor minders	—	—	—	—	—	6s., rarely more than 7s.	—	—	—	—	—
Warpers	—	—	—	—	—		—	—	—	—	—
Winders	—	—	—	—	—		—	—	—	—	—
Burlers and knotters	—	—	—	—	—		—	—	—	—	—
Menders and fine drawers	—	—	—	—	—		—	—	—	—	—

*for a **Full Week's Work** in the Woollen Industry.*

G '58.	G '60–61.	H '67.	B '70.	K '71.	L '74.	K '76.	G '80.	O '83.	Proportionate Numbers in 1886.	M '86.	N '91.	B '93.	B 1901.
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.		s. d.	s. d.	s. d.	s. d.
24 -	24 -	22 -	25 -	18s. to 26s.	30s. to 35s.	25s. to 30s.	--	26 -	3	26 7	—	—	—
16s. to 20s.	16s. to 20s.	—	—	16 -	—	—	—	19s. 6d. to 21s.	4	22 10	—	—	—
30s. to 60s.	30s. to 60s.	—	—	—	—	—	--	--	2	44 -	—	—	—
16s. to 18s.	16s. to 18s.	—	—	—	—	24s. to 30s.	—	26s. to 30s.	13	22 2	—	—	—
27 -	27 -	—	—	—	30s. to 35s.	—	—	—	0	—	—	—	—
12s. to 14s.	12s. to 18s.	—	20 -	15s. to 20s.	—	20s. to 25s.	24 -	20 9	20	22 6	23 -	23 -	25 -
—	—	—	—	—	—	--	55 -	60s. to 70s.	9	46 4	—	--	—
—	—	—	—	—	--	—	—	25 -	30	22 -	—	23 -	—
28 -	28 -	—	—	15s. to 23s.	—	26s. to 30s.	37 6	35s. to 40s.	17	31 6	—	30 -	—
—	—	—	—	—	—	—	26 -	24s. to 28s.	2	18 1	—	—	—
—	—	—	—	—	—	—			12	23 5	—	—	—
30s. to 40s.	30s. to 36s.	—	—	—	—	—	—	24s. to 35s.	4	34 7	—	—	—
18s. to 20s.	18s. to 20s.	—	—	20s. to 30s.	—	22s. to 30s.	25s. to 40s.	16s. to 21s.	15	23 6	—	—	—
20s. to 22s.	20s. to 22s.	18s. to 22s.	18s. to 23s.	20s. to 24s.	—	28s. to 35s.	-	25 9	9	24 -	—	—	—
26s. to 30s.	26s. to 30s.	--	28 -		—		--	22 4	3	23 5	—	—	—
35s. to 40s.	35s. to 40s.	—	35 -		30 -		—	—	3	31 11	—	30 -	—
—	—	—	—		—		—	25 -	2	32 10	—	—	—
30s. to 40s.	30s. to 40s.	—	35 -		30 -		-	35 -	2	34 6	—	—	—
24 -	24 -	—	—	—	—	—	--	30s. to 35s.	7	34 -	—	—	—
—	—	—	—	—	—	—	-	20 -	3	20 5	—	—	—
—	—	—	—	—	—	—	—	24 -	6	22 7	—	—	—
20s. to 26s.	20s. to 26s.	—	—	—	24 -	—	--	18s. to 25s.	18	25 8	—	—	—
21s. to 28s.	30s. to 36s.	—	—	—	—	—	50 -	30s. to 35s.	14	35 4	—	30 -	—
—	—	—	—	—	20 -	20 -	—	—	7	15 9	—	—	—
10s. to 12s.	10s. to 15s.	—	12 -	10s. to 16s.	14 -	14 -	14 6	13s.6d. to 16s.	452	13 7	—	—	—
15 -	15 -	—	—	—	—	--	--	--	3	18 9	—	--	—
—	—	—	—	--	--	—	—	45s. to 75s.	3	55 10	—	—	—
—	—	—	—	—	—	—	—	18s. to 26s.	—	—	—	—	—
—	—	—	9 -	7s. 6d. to 12s.	—	—	—	11 6	32	10 8	11 -	—	11s. to 12s.
12 -	12 -	—	—	12s. to 18s.	--	—	--	15 6	6	15 2	—	—	—
—	—	—	—	—	—	—	--	10 -	—	—	—	—	7s. 6d. to 11s.
5s. to 7s. 6d.	5s. to 7s. 6d.	—	—	9s. to 12s.	—	—	--	11 5	55	10 1	—	10 -	9s. to 10s.6d.
—	—	—	—	13 -	—	—	—	16 -	28	13 10	13 -	—	12s. to 18s.

Notes to Leeds and District Table.

* For sources of these statements, see below under Weavers.

† See below, under Spinners.

A Baines gives slubbers and spinners; Arthur Young, croppers and weavers; Eden, scribblers, dressers, and weavers.

B Baines's *Yorkshire, Past and Present*, 1871.

C Committee on *Artizans and Machinery*, 1824.

D From the *Report of the Committee on Manufactures Employment*, 1830. The women's wages are taken from an historical paper by Miss Collet in the *Economic Journal*, vol. i.

E From the *Report of the Hand Loom Weavers' Commission*, 1838-40.

F *Journal of the Statistical Society*, 1840.

G *Returns of Wages* (C–5172); but wool sorter in 1883 from H.

H Leone Levi, *Wages and Earnings*; but weavers in 1855-57 from G.

K Bevan, *Industrial Classes and Industrial Statistics*. These figures are not given as referring to Leeds specially, but as "wages in woollen mills" in general. They seem to apply closely to the Leeds district. Cloth raisers, cutters, pressers, &c., are put in one group.

L Noble, *National Finance*. The figures are given in the original, together with those for 1839, in the *Journal of the Statistical Society* (F).

M The *Wage Census*.

N The Labour Commission.

R From special information.

In making comparisons the columns marked A, B, G and M may be taken together. F and L are comparable with each other, and so are the two K columns. The remaining columns, A, C, D, E and N, should be treated as subsidiary. In compiling the index-numbers (p. 117), attention has been paid to this.

Weavers.—The wages of handloom weavers in the woollen district seem to have followed very nearly the same course as in Bradford. Piecing together the evidence given by Mr. Chapman to the Handloom Weavers' Commission of 1838-40, with Bischoff's account, and Arthur Young's statements, we find that the weekly earnings of a good weaver in full work were about 12*s.* from 1766 to 1796; a temporary rise was followed by a return to the same level from about 1800 to 1804. Then for some ten or twelve years very high rates were obtained, up to perhaps 20*s* or 24*s.*, but there is no sufficient evidence as to the exact level reached. From 1816 the fall seems to have been slow, till perhaps 1827, and then to have been rapid. The general average for a week's full work in 1837 was 12*s.* net; in Leeds itself the earnings of different workmen varied from 8*s.* to 20*s.*, while in the surrounding district (to Guisley, Shipley, Pudsey, Morley) they were some 4*s.* lower: but there is not much doubt that the average was near 12*s.*; in 1830 it was probably 50 per cent. higher. Thus the great fall took place in 1830-37, the time of the introduction of the power loom. The *annual* earnings of the handloom weavers in 1838 were very much less than would appear from this weekly average for full work, for employment was very irregular and uncertain;

combined with the fall in wages there was a great deficiency of work, and the condition of the cottage weavers was, at the time of the Commission, and probably till the home industry died out, wretched in the extreme.

We learn from Miss Collet (*Economic Journal*, vol. i) that the power loom was introduced for stuff in 1826, and for cloth in 1832. In 1838 Mr. Chapman estimated that there were about 4,000 hand looms in Leeds, and 4,500 in the surrounding country. In 1835 there appear to have been about 200 cloth power looms in Leeds itself, and it may be conjectured from Miss Collet's statistics, and from Baines's figures for 1836 and 1856, that the Leeds district formed about one-third of the whole woollen area, and that in it there were some 700 looms for woollen cloth and stuffs. Women were earning 9*s*. weekly in 1835. Hand loom weavers were still to be taken into account till 1861; from 1871 onwards we only find them mentioned as pattern weavers. The question of the relative numbers at the various dates is too large to go into here, for account would have to be taken of the whole of the West Riding: but the effect of the gradual change on the average has been considered in calculating the index-numbers. In Leeds the bulk of the power weavers have been women, at any rate since 1874. The evidence as to weavers' wages since 1886 in the Labour Commission and from other sources is so conflicting as to be almost useless. The wage books of one high-class firm in Leeds showed that the 99 weavers employed had averaged 45*l*. 9*s*. during the twelve consecutive months in 1900 or 1900-01, making 18*s*. a week for 50½ weeks; while in the same firm 14*s*. or 15*s*. was considered good in 1874. In answer to an inquiry as to whether this rise was in any way typical of the weavers in the district, I received the following reply: "I confirm my statement that 18*s*. is a fair statement of the earnings of our weavers during the last twelve months, and is rather under than over the mark. But I fancy I over-estimated the wages in 1874 at 14*s*. to 15*s*. per week. There are various reasons for the difference; about the time of the Huddersfield strike,[9] say from 1880 to 1885, we raised the price 7½ to 10 per cent.; we now make a better class of goods, and require more skilled workwomen than formerly, and weavers can turn out a larger quantity of cloth per week, owing to the great improvements in looms. In order to retain the best hands, it is necessary to have the best looms, good tuners, and good and regular employment. I have no doubt that there are many factories in Leeds where the same price is paid as we do, and the average earnings have not been 10*s*. per week. Again, in the low trade, where they weave cotton warps and woollen weft, I fancy 12*s*. or 14*s*. would be considersd very fair earnings—but then the type of workwoman is not so high as in the better class trade." This shows how impossible it is to take a fair average without a complete census, and reconciles the evidence given before the Labour Commission by manufacturers who spoke of wages of 20*s*. and upwards, while the special women's report contains various estimates whose average is about 13*s.* In 1893 I was told that 9*s.* was the average, but this probably allowed for broken time. On the whole then we have no definite evidence of either rise or fall since 1886.

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[9] That of 1883, the date of the Huddersfield weavers' list.

Spinning.—In the woollen districts the spinners are adult men, minding self-acting mules; the piecers are boys or girls, according to the locality: in Leeds they are girls, in Batley boys. A great part of the yarn used is not spun by the manufacturers. Jenny spinning gave way to mule spinning about 1826. At the time of the change men were making 20*s.* 4*d.* on the jenny, but the mule-spinner started at 40*s.*, out of which he paid 6*s.* to each of two piecers. The spinners' wage soon fell, and has passed through several fluctuations. The piecers' wage remained near 6*s.* till 1870, but has since risen to 9*s.* 6*d.*

We can make some interesting comparisons between sex and age and wage at three dates:—

Leeds Woollen Manufacture.

Ure's *Philosophy of Manufactures*, 1833.						Manufacturing and Finishing Woollen Factory, 1858. (Baines's *Yorkshire*.)			Wages Census, 1886.		
Age.	Weekly Wage. Males.	Weekly Wage. Females		Number of Hands.*	Average Weekly Wage.	Number of Hands.	Per Cent.	Average Weekly Wage.	Number of Hands.	Per Cent.	Average Weekly Wage.
	s. d.	*s. d.*			*s. d.*			*s. d.*			*s. d.*
Below 11 years....	2 -	2 5	Men	1,406	21 6	200	35	23 8	494	24	26 -
11—16	4 4	4 7	Women	1,292	6 10	330	58	8 -	1,212	60	13 -
16—21	9 9	6 5									
21—26	19 7	7 -	Girls	921	4 1				179	9	8 6
26—51	22 - to 22 6	7 - to 7 6	Boys	914	3 9	40	7	6 8	144	7	8 6
51—61	21 - to 22 -	6 - to 7 6		4,533	10 3	570	—	13 -	2,029	—	15 7

* From MacCulloch's *Statistical Account of the British Empire*, 1839.

Ure's table probably does not include hand loom weavers. If we estimate that they were 40 per cent. of all employed, and made 15*s.* a week in 1833, we should have at that date:—Men (60 per cent. of all) 17*s.*, women (20 per cent.) 7*s.*, girls and boys (each 10 per cent.) 4*s.*, altogether 12*s.* 6*d.*, taking into account all factory workers and all men hand loom weavers. It is seen that in the factories men's wages rose 5 per cent. in the twenty-five years 1833-58, and 10 per cent. in the following twenty-eight years. Women's wages increased faster, if we can regard the lists as comparable, and their proportionate number also increased between 1858 and 1886. The increase in the average for all hands is 20 per cent. in the second period.

The information contained in the large table is very difficult to work into the form of index-numbers, and the difficulty is greatly enhanced by the absence of any definite and reliable statistics of the relative numbers of women and men weavers and others at most of the dates. The following list is little better than a conjecture, and should not be treated as an estimate of the same nature as the numbers given in former papers of this series; but it is formed after due consideration of the various changes described, and gives nearly the same ratio of increase (calculated independently) for 1858-60 as in the comparison just given, and is consistent also with Ure's table for 1833.

Conjectural Course of Wages in the Wool Industry of Leeds and Neighbourhood. (*Adults only.*)

1795.	1805.	'15.	'25.	'35.	'45.	'57.	'60.	'70.	'75.	'80.	'83.	'86.	1901.
80	90	115	110	75	80	85	95	100	125	110	105	100	100

These numbers are intended to represent the average wage for a full week's work of all adults employed in the industry, whether in the mills or at home, expressed year by year as a percentage of its level in 1901.

HUDDERSFIELD.—*Statement of Average Wages*

	A	B	C	B	B	B	G
	1833.	1839.	1843.	1849.	1859–61.	1866–68.	1871.
Men.		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Woolsorters	General average, adult males, 20s.	21 –	—	22 –	22 6	22s. to 32s.	22s. to 26s.
Washers, &c.		17 –	—	18 –	21 –	16s. 6d. 21s.	—
Slubbers		23 –	—	24 –	24 –	22s. to 28s.	27 –
Dyers' foremen		30 –	—	36 –	40 –	22s. ,, 36s.	—
Dyers		16 –	14 –	17 6	17 6	15s. ,, 22s.	18 –
Scribblers' foremen		—	—	—	—	35 –	—
Spinners' foremen		—	—	—	—	—	—
Spinners		25 6	30 –	25 6	27 –	18s. to 30s.	—
Warpers		16 –	—	18 –	20 –	15s. ,, 26s.	—
Beamers		18 –	—	20 –	22 –		—
Fettlers		—	—	—	—	15s. ,, 21s.	—
Fullers' formen		23 –	—	32 –	35 –	28s. to 30s.	—
Fullers		18 –	17 –	19 6	19 6	16s. ,, 26s.	20s. to 21s.
Dressers or giggers		18 –	20 –	19 6	20 6	18s. ,, 22s.	—
Tenterers		20 –	20 –	21 –	22 –	18s. ,, 22s.	20 –
Cutters or croppers		20 –	20 –	21 6	22 –	18s. ,, 24s.	—
Press setters		23 –	20 –	23 –	26 –	18s. ,, 24s.	20 –
Steamers		—	—	—	—	—	—
Warehousemen		22 –	—	25 –	25 –	20s. to 39s.	—
Engine tenters	—	17s. to 24s.	—	17s. to 24s.	18s. to 27s.	18s. to 32s.	—
Stokers	—	—	—	—	—	—	—
Mechanics	—	—	—	—	—	18s. to 26s.	27 –
Carters	—	—	—	—	—	—	—
Labourers	—	—	—	—	—	20 –	—
Weaving.							
Power loom tuners	—	22 – 25 –	— —	25 – 30 –	30 –	22s. to 35s.	24 –
Power loom, men	—	—	14 –	10 9	18 –	18s. to 23s. 6d.	—
,, women	—	8 8	9 –	9 10	12s. to 15s.	10s. to 20s.	11s. to 16s.
Hand loom, men	14	12 –	14 –	12 –	16 –	—	—
Pattern designers	—	30 –	—	37 6	65 –	30s. to 50s.	—
,, weavers	—	16 –	—	18 –	25 –	16s. ,, 30s.	—
Women.							
Scribblers' feeders	—	—	7 –	—	—	8s. 6d. to 9s.	7 6
Condensor minders	—	—	—	—	—	9s. to 10s.	—
Spinners' piecers	—	—	—	—	—	—	—
Warpers	—	—	—	—	—	14 –	—
Healders	—	—	—	—	—	12 –	—
Winders	—	—	—	—	—	8 –	—
Burlers and knotters	7s. 6d.	7 –	6 –	7 6	9 –	7s. to 10s.	8s. to 9s.
Menders and sewers	—	—	10 –	—	—	8s. ,, 11s.	—

A. From the *Report of the Committee on Manufactures, Commerce, and Shipping*, 1833, except weavers.

B. *Returns of Wages* (C–5172). These are reproduced practically as they are given; their form is nearly unchanged year by year, and they make a good comparable series, which E completes.

C. From J. Platt's *Poverty*. His figures for 1843 are given to compare with the following for 1883: dyers and fullers, 22s.; spinners, 30s.; weavers, men, 24s., women, 18s.; feeders, 12s.; burlers, 9s.; knotters, 10s.; menders, 16s.

Weavers.—There is, fortunately, little controversy as to Huddersfield wages. The hand loom gave way to the power loom between about 1840 and 1866; but the hand looms lingered on for pattern weaving till a recent date. In 1886 there were about 12 power looms to 1 hand loom; in 1866 perhaps the proportion was 3 to 1.

*for a **Full Week's Work** in the Woollen Industry.*

B	B	B	B	D	E	F	D	D	Pro-portionate Numbers, 1886, of all in Factory.
1874.	1877.	1880.	1883.	1883.	1886.	1891.	1893.	1901.	
s. *d.*		*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	
28 –	26*s.* to 28*s.*	24 –	25 –	25 –	25 3	—	—	—	6
21 –	21*s.* ,, 23*s.*	22 –	21 –	21 –	21 11	—	22 –	22 –	6
—	—	—	—	—	—	—	—	—	—
46 –	50*s.* to 60*s.*	50 –	40 –	40 –	49 1	—	40 –	?	3
21 –	22*s.* ,, 24*s.*	22 –	22 –	22 –	22 2	—	22 –	23 –	20
45 –	50*s.* ,, 60*s.*	50 –	55 –	—	42 1	—	—	30*s.* to 60*s.*	6
—	35*s.* to 45*s.*	45 –	—	—	42 10	—	—	43 –	4
28 –	30*s.* ,, 40*s.*	30 –	30 –	30 –	28 1	—	—	30 –	23
25 –	25*s.* ,, 28*s.*	27 –	22 –	{ +	21 2	—	24 –	25 6	9
				{ +	24 2	—	24 –	24 –	12
—	20*s.* ,, 22*s.*	22 –	21 –	+	20 10	—	23 –	23 –	13
35 –	40*s.* to 50*s.*	35 –	40 –	40 –	37 –	—	40 –	40 –	2
25 –	22*s.* ,, 25*s.*	23 –	18*s.* to 22*s.*	22 –	24 –	—	23 –	23 –	11
26 –	24*s.* ,, 25*s.*	26 –	22 –	22 –	23 –	—	—	—	19
23 6	24*s.* ,, 25*s.*	24 –	24 –	24 –	22 3	—	24 –	24 –	6
25 –	24*s.* ,, 26*s.*	24 –	21 –	21 –	24 1	—	—	—	15
26 –	26*s.* ,, 28*s.*	25 –	25 –	25 –	25 9	—	25 –	25 –	9
—	24*s.* ,, 26*s.*	25 –	20 –	20 –	23 9	—	—	—	5
—	20*s.* ,, 25*s.*	25 –	24 –	24 –	23 –	—	24 –	24 –	13
22 –	25*s.* to 30*s.*	35 –	30 –	+	32 1	—	32 6	—	5
—	24*s.* ,, 28*s.*	22 –	21 –	21 –	20 4	—	21 –	—	5
30 –	30*s.* ,, 40*s.*	27 –	28 –	+	26 11	—	30 –	—	5
—	20*s.* ,, 24*s.*	22 –	21 –	21 –	21 4	—	21 –	—	6
16 –	20*s.* ,, 22*s.*	20 –	21 –	20 –	22 –	—	20 –	—	6
35 –	25*s.* to 35*s.*	32 –	34 –	34 –	33 9	—	32 –	32 6	16
24 –	20*s.* ,, 35*s.*	26 –	15*s.* to 25*s.*	20*s.* to 27*s.*	22 10	24 –	22*s.* to 28*s.*	26 –	112
—	—	18 –	12*s.* ,, 16*s.*	15*s.* ,, 19*s.*	15 6	16 –	12*s.* ,, 16*s.*	13*s.* to 17*s.*	198
—	—	—	—	—	—	—	—	—	—
40 –	50*s.* to 60*s.*	60 –	60 –	?	45 8	—	—	—	2
25 –	25*s.* ,, 30*s.*	25 –	25 –	25 –	21 2	—	22*s.* to 28*s.*	—	26
—	—	11 –	11 –	11 6	12 2	—	11 6	12 –	} 33
—	10*s.* to 12*s.*	12 –	10 6	11 6	12 2	—	11 6	12 –	
—	—	12 –	9 –	9 –	10 10	—	9 –	10 –	6
—	—	—	—	16 –	13 4	—	—	—	14
—	—	—	12 –	12 –	11 11	—	—	—	2
10 –	9*s.* to 12*s.*	11 –	8 –	+	9 9	10 –	10 –	10 –	8
10 –	10*s.* to 12*s.*	10 –	11 –	11 –	10 9	—	11 –	11 –	68
11 –	—	15 –	14 –	14 –	14 9	—	14 –	14 –	35

D. Special Investigations. In 1893 my informant, who was specially well qualified to know the facts, went through the Returns for 1883, pointed out where he thought they were erroneous (the + in the 1883 D column means that he thought the returns too low), and then gave his estimate for 1893. In 1901 he went through the figures in a similar way. Thus for comparison the D columns can be compared with each other, and can be connected with the B series by the double column for 1883.

E. From the *Wage Census*.

F. Evidence given to the Labour Commission.

G. Baines's *Yorkshire*; this column can only be treated as subsidiary.

One worker to one loom is still universal on the Huddersfield broad cloth, though it is said that recently mills nearer Bradford obtained some of the typical Huddersfield trade, and that one woman worked two broad looms. At the first introduction of power looms women weavers on them were in a minority; in 1883 only some 40 per cent. were women, but in 1893 60 per cent.; and in 1901 65 per cent. was the estimate. It may be noticed that in the table just given their weekly earnings are about two-thirds of those of men from 1859 to 1891. A piece scale, similar in character to the better known cotton lists, was arranged in 1883,[10] and though not at first very generally followed, has been coming into increasing operation; deductions are to be made from the men's lists if the weavers are women; these are said to average in practice between 10 and 20 per cent., while 2½ per cent. would be sufficient to allow for the extra cost of overlooking and tuning. From these figures it appears that women do about three-quarters of the work men would do in the same time.

In the Wage Census, 1886, we find 438 men, averaging 22*s.* 10*d.* for a 56½ hours week, some earning as little as 18*s.*, others 26*s.* 6*d.*; 776 women average 15*s.* 6*d.*, the range being from 10*s.* to 20*s.* In 1891 it was estimated that men averaged 24*s.* on a full week, but only 17*s.* 6*d.* through the year; while in 1901 the corresponding figures were 26*s.* and 22*s.* This increase is borne out by the record of several increases to small groups of men in the Labour Department's annual statements of changes of wages. On the other hand, it is said that women's wages fell in the decade 1891 to 1901, though there has been an upward tendency recently. In the *Yorkshire Factory Times*, 8th November, 1901, we read that hundreds of weavers, chiefly women, make less than 16*s.*, one week with another, through the year, even when work is good; and that this is brought down to 14*s.* or 12*s.* when work is only moderately plentiful. These figures should be compared with those already given for Bradford.

Spinning.—Self-acting mules were introduced at any rate before 1839, and for long only children were employed as piecers. A change took place between 1877 to 1883; before the earlier date. one spinner (at 28*s.*) and two piecers (6*s.* to 11*s.*) were to be found at each pair of mules; but in 1896, one spinner (at 34*s.*), one minder (at 17*s.*), and four piecers (at 6*s.* to 17*s.*) were employed at two pair of mules. The wage census does not give the same classification, showing 128 adults to 319 children, thus:—

		Average Wage.		
		s.	*d.*	
Spinning in 1886	14 foremen	42	10	
	90 spinners, men	28	2	(ranging from 20*s.* to 35*s.*)
	24 piecers, women	10	10	
	198 „ lads	9	2	
	121 „ girls	7	6	

The change was perhaps still in progress in 1886. It is said that a corresponding change has taken place in all wool spinning. There are few half-timers in the Huddersfield district. Piecers' wages have gradually increased from 5*s.* in 1839.

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[10] The scale is given in *Standard Piece Rates*, 1894 (C–7567–I).

In many of the occupations the line between women and girls is not clearly drawn. The averages for foremen's wages are based on few returns and are unreliable; these wages vary greatly from man to man.

Making allowance for all the changes just described, especially for the increasing number of women, we find the following approximate index-numbers, showing what percentage the average earnings of all adults, men and women, in the Huddersfield woollen trade were of their height in 1901 :—

1833.	'39.	'49.	'59-61.	'66-68.	'74.	'77.	'80.	'83.	'86.	'91.	'93.	1901.
80	75	80	95	100	115	120	110	100	103	98	100	100

It is stated (Committee on Manufactures, 1833) that the rates were stationary from 1816-33 (excluding weavers).

The weekly hours of labour were 65 in 1839, 60 from 1849 to 1870, 56½ from 1874 to 1901.

These numbers are influenced a great deal both by weavers' earnings, which form a large proportion of the whole, and by the somewhat doubtful assumptions we are compelled to make as to their numbers. If we omitted weavers altogether, we should have 1839, 80; 1860, 96; 1874-77, 112; 1886-1901, 100. A glance at the table will show how very slow have been the changes of rates of wages for nearly all the separate occupations.

Batley and Dewsbury.

The industry of the "Heavy Woollen District" presents many differences from those of its neighbours, whether Leeds or Huddersfield, but they are not such as need much explanation when the object is only to compile wage statistics. The shoddy trade is of more recent development than that of worsted or of previously unused wool, and hence the figures relating to it can not be traced back further than 1858. There is now so great a variety of material in textile fabrics: cotton, wool, worsted, rag-wool, silk are worked together in various combinations, two and two, with such skill that it needs an expert to discover the nature of the original warp and weft; and it is not possible to delimitate different districts as given over solely to any one manufacture. For each of the tables given, however, the occupations are chosen which have the greatest local importance.

HEAVY WOOLLEN DISTRICT.—*Statement of*

	A	A	B	B	B	C	B	C	B
	Proportionate Numbers.	Batley. 1858.	Batley. '66.	Dewsbury. '66.	Dewsbury. '67–68.	Dewsbury. '70.	Dewsbury. '71.		Batley. '74.
						i.		ii.	
Men.		*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
Rag grinders	13	16*s.* to 26*s.*	—	—	—	20 -	—	—	—
Wool sorters	5	20*s.* to 25*s.*	25 -	25 6	30 -	25 -	26 -	18*s.* to 23*s.*	30 -
Washers, &c.	4	18 -	20 -	18 6	20 -	—	18 -	—	22 -
Teazers and willyers	10	18*s.* to 20*s.*	20 -	18 6	20 -	16 -	19 -	10*s.* to 16*s.*	23 -
Slubbers	22	30 -	—	35 -	30 -	26 -	—	—	—
Scribblers and fettlers	—	—	30 -	17 -	—	17 -	—	19 -	20 -
Scribblers' foremen	3	35*s.* to 40*s.*	42 -	45 -	50 -	—	45 -	—	50 -
Spinners' foremen	—	—	—	—	—	—	40 -	—	—
Spinners	10	28*s.* to 30*s.*	30 -	34 -	30 -	15 -	30 -	—	30 -
Beamers	—	—	22 -	21 -	24 -	—	21 -	—	—
Dyers' foremen	2	40 -	40 -	40 -	46 -	—	40 -	—	50 -
Dyers	9	17 -	21 -	21 -	20 -	22 -	21 -	—	24 -
Fullers' foremen	—	—	40 -	40 -	40 -	—	35 -	25*s.* to 35*s.*	40 -
Fullers or millers	11	25 -	25 -	24 -	22 -	21 -	20 -		25 -
Tenterers	14	25 -	20 -	25 -	23 -	24 -	23 -	—	30 -
Dressers or giggers	—	—	20 -	21 -	20 -	—	20 -	—	22 -
Croppers or cutters	—	--	25 -	24 -	25 -	—	20 -	--	30 -
Croppers' assistants	—	—	—	—	—	—	—	—	—
Press setters	—	—	22 -	26 -	22 -	24 -	22 -	—	25 -
Drawers	7	30 -	30 -	34 -	32 -	24 -	40 -	—	40 -
Steamers	—	—	—	—	--	—	—	—	—
Brushers	15	20 -	22 -	22 -	25 -	—	22 -	—	27 -
Engine tenters	4	30 -	30 -	25 -	30 -	20 -	35 -	—	40 -
Weaving.									
Tuners	5	15*s.* to 25*s.*	40 -	40 -	40 -	35 -	35 -	24*s.* to 25*s.*	50 -
Power loom—									
Men	—	—	20 -	20 -	19 -	—	20 -	—	18 -
Women	50	9*s.* to 10*s.*	12 -	13 -	14 -	14 -	16 -	10*s.* to 16*s.*	15 -
Hand loom	126	18 -	—	—	—	—	—	—	--
Pattern designers	—	—	40 -	36 -	35 -	—	—	—	60 -
,, weavers	—	—	—	22 -	—	—	—	—	49 -
Women.									
Waste sorters	50	6*s.* 6*d.* to 7*s.* 6*d.*	—	—	—	8 -	—	—	--
Scribblers' feeders and condensor minders	—	—	10 -	11 - 9 -	12 -	12 -	12 -	10*s.* to 12*s.*	14 -
Yarn doublers and hankers	—	—	—	—	—	—	—	—	—
Warpers	18	8 -	—	16 -	12 -	—	13 -	—	15 -
Burlers and knotters	36	6*s.* 6*d.* to 7*s.* 6*d.*	12 -	10 -	10 6	10 -	11 -	9*s.* to 12*s.*	11 -
Menders and fine drawers	—	—	—	12 -	14 -	13 -	12 -	—	—

A. From the *Shoddy Trade*, by S. Jubb, 1860.

These 1893 figures are from the *Yorkshire Factory Times*, in a notice of Jubb's book. They are intended to be comparable with the 1860 figures, but are only a rough generalisation, finishing with the remark, "and no class are paid anything like a decent wage [in 1893]."

B. *Returns of Wages.* (C–5172.) The series is a very good one, and the proportionate number employed in each occupation is given year by year.

Average Wages for a Full Week's Work.

B	B	B	B	B	B	E	E	F	D	F	A	F
Dewsbury. '74.	Dewsbury. '77.	Batley. '77.	Dewsbury. '80.	Batley. '80.	Dewsbury. '83.	Proportionate Numbers.	District '86.	District. '86.	District. '91.	District. '93.	Batley. '93.	District. 1901.
s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*		*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
—	—	—	—	—	—	—	20 -	—	16*s.* to 23*s.*	22 6	—	—
26 -	26 -	30 -	26 -	30 -	26 -	19	26 5	—	—	—	—	—
20 -	24 -	22 -	24 -	22 -	24 -	13	21 11	—	—	—	—	—
23 6	24 -	23 -	21 -	22 -	21 -	95	21 9	21 -	—	20 -	—	21*s.* or 21*s.*6*d.*
20 -	—	—	—	—	—	—	—	—	—	—	—	—
—	24 -	22 -	28 -	22 -	28 -	109	22 1	21 -	—	20 -	—	22 -
50 -	50 -	50 -	50 -	—	40 -	30	48 9	—	—	—	—	—
45 -	45 -	—	40 -	50 -	40 -	9	44 11	35*s.* and upwards	—	—	—	—
30 -	35 -	30 -	32 -	30 -	32 -	100	30 2	25 6	24 -	24 -	15*s.* to 35*s.*	24 -
23 -	—	23 -	22 -	23 -	22 -	47	23 8	25 -	—	—	—	25 -
50 -	60 -	50 -	60 -	50 -	40 -	12	47 3	—	—	—	—	—
23 -	24 -	24 -	22 -	22 -	22 -	69	22 3	22 3	—	—	—	23 -
40 -	60 -	40 -	60 -	40 -	40 -	17	35 9	—	—	—	—	—
24 -	24 -	25 -	24 -	25 -	25 -	90	22 11	22 11	—	—	—	22 -
25 -	25 -	25 -	23 -	25 -	25 -	29	25 4	25 -	—	—	20*s.* to 23*s.*	24 -
23 -	23 -	22 -	21 -	22 -	25 -	115	21 8	21 8	—	—	—	19 -
25 -	25 -	30 -	23 -	23 -	24 -	15	44 4	*	—	—	—	—
—	—	—	—	—	—	47	21 2	*	—	—	—	—
24 -	24 -	25 -	23 -	25 -	23 -	50	23 5	—	—	23 -	—	—
40 -	40 -	40 -	40 -	35 -	40 -	—	—	—	—	—	—	—
—	—	25 -	23 -	25 -	23 -	11	21 7	21 7	—	19 -	15*s.* to 20*s.*	20 7
24 -	24 -	—	23 -	—	23 -	21	19 7	19 7	—			19 7
35 -	40 -	40 -	35 -	40 -	35 -	22	30 3	—	—	—	24*s.* to 44*s.*	—
40 -	40 -	40 -	35 -	40 -	35 -	84	34 -	25 -	—	26 6	—	26 -
—	26 -	20 -	25 -	20 -	—	123	15 10	15 -	12 - highest	(10 6)	—	15 -
16 -	16 -	16 -	15 -	15 -	15 -	1623	14 4	14 4			(9*s.* to 10*s.*)	13 6 (11 6)
—	—	—	—	—	25 -	8	24 8	—	—	—	—	—
55 -	50 -	60 -	60 -	60 -	60 -	10	47 9	—	—	—	—	—
35 -		—	30 -	24 -	—	—	—	—	—	—	—	—
—	—	—	—	—	—	11	11 4	11 4	—	11 -	11 -	11 4
13 - 12 6	14 -	14 -	12 6	14 - 10 -	13 -	162	12 3	12 3	—	11 -	—	12 3
—	—	—	—	—	12 -	31	12 -	*	—	—	—	—
14 -	15 -	15 -	14 -	15 -	13 6	8	14 8	14 8	—	—	11 -	14 8
13 -	12 -	11 -	12 -	11 -	12 -	114	10 5	10 5	—	9 -	—	10 5
13 -	12 -	13 -	12 -	13 -	13 -	101	13 9	13 9	—	—	—	13 9

C. Baines. i, Dewsbury, ii, neighbourhood of Dewsbury.

D. The Labour Commission.

E. The *Wage Census*.

F. Special information, obtained (as in Huddersfield) by direct criticism of the official returns, in this case those of 1886.

* My informant could make nothing of the figures for croppers or winders in Col. E.

Weavers.—In 1860, according to Jubb, there were 1,260 hand looms to 500 power loom weavers. The power looms are said to have been introduced about 1850, and the hand looms to have died out by 1883, except for a few pattern weavers. In 1872 there were about 40 per cent. men to 60 per cent. women weavers; since then other industries have opened for men in the neighbourhood, the prices for weaving have been cut, offering them little inducement to remain, and the increasing demand for weavers has been supplied by women, often married women. By 1886 only 15 per cent. were men; now less than 5 per cent.; in three large mills only 3 in 230. The weekly earnings are said to have diminished a little between 1892 and 1896, but have since been stationary. I was given a very carefully considered estimate of the average earnings of women weavers, 1898-01; if the overtime recently allowed for military exigencies is left out of account, the average earnings for this period was said to be 26*l.* to 30*l.* per annum, or 11*s.* 6*d.* per week, one week with another. For a full week's work 13*s.* 6*d.* would be made, so that lost time in that period averaged eight weeks per annum. The estimates for 1893, in the table given in brackets, correspond to this lower figure of 11*s.* 6*d.* The higher rate, 13*s.* 6*d.*, is to be compared with the B columns.

I was told by a very reliable authority that the general course of wages for all employees in the trade had been as follows: 1866 to 1874 or 1875 there was an increase of 20 per cent.; this was followed by a very slow fall of 10 per cent., reaching the minimun in 1888 or 1890; there was no change till 1896 or 1898, but during the last three years the 10 per cent. has been returned. This estimate did not, I believe, allow for the increasing proportion of women weavers.

Another statement, from the workers' side, was that there was little change from 1880 to 1886, that 1891 was lower than 1886, and that on the whole men's wages had risen and women's fallen between 1886 and 1901, so that the average had not changed.

In view of these partly conflicting statements, and of the uncertainty as to the relative numbers of men weavers, women weavers, and other operatives, the actual course of average wages is a matter for conjecture. The following scheme may be suggested as that arising from the table just given, which in itself is probably reliable, but based on assumptions as to relative numbers, which are at best approximate:—

	1866.	'67-68.	'71.	'74.	'77.	'80.	'83.	'86.	'93.	1901.
Weavers—										
Men—										
Relative number	*18*	*18*	*18*	*18*	*16*	*13*	*10*	*7*	*5*	*0*
Average wage	20/-	19/-	20/-	19/-	23/-	22/6	16/8	15/10	15/10	—
Women—										
Relative number	*27*	*27*	*27*	*27*	*29*	*32*	*35*	*38*	*40*	*45*
Average wage	12/6	13/6	15/6	15/6	16/-	15/-	15/-	14/4	12/-	13/6
Other men—										
Relative number	*41*	*41*	*41*	*41*	*41*	*41*	*41*	*41*	*41*	*41*
Average wage	24/6	25/6	27/-	27/-	28/-	27/-	26/6	26/-	25/6	25/10
Other women—										
Relative number	*14*	*14*	*14*	*14*	*14*	*14*	*14*	*14*	*14*	*14*
Average wage	12/-	12/-	13/-	14/-	14/-	13/-	14/-	13/-	13/-	13/-
Index-number (1901 = 100)	100	105	105	115	115	115	105	105	95	100

Rough though these figures are, I do not think that the general impression given is far wrong. I have not used Mr. Jubb's 1858 figures, on the general ground that they are not collected on the same basis as the later ones. A comparison of his with the returns for 1866 suggests a general rise of 10 per cent.; and as he states that wages were rising between 1858 and 1860, and the period 1860-66 was one of rising wages, the index-number, 90, for 1858 may very well be near the mark.

General Index-Numbers. Wool and Worsted.

After the qualifying remarks attached to the index-numbers for Bradford, Leeds, Huddersfield, and Batley, it will be clear that we cannot hope to attain any accurate index-numbers for the woollen industry as a whole. Yet if we plot out these four sets of numbers on a diagram, and interpolate graphically for the intermediate years (a task which I left till the rest was ready for the press), the closeness of the four lines obtained is very noticeable. If we follow the Leeds line, which is the earliest, we find that when the Bradford line begins in 1823, the two are close together; that the Huddersfield line begins on the Leeds line in 1833, and the Batley line close to it in 1858; they all are near 120 at their maximum in 1874 to 1877, and fall to 100 in the early eighties, since which the changes are very small. This consilience gives to the figures an importance they would not otherwise have, and makes it possible to give the following round numbers with some confidence, especially in respect to those after 1840:—

Index-Numbers, expressing the average wage of all adults engaged in the Woollen and Worsted Industries of the West Riding in round numbers, for various years.

(1795) **80** rising to (1815) **115**; falling to (1840) **75**; rising to (1860) **90** (1866), **100**, and (1874-77) **120**, falling to (1883) **105** and (1886) **100**, and nearly stationary to (1891) **100**.

These differ from the estimates in earlier papers (*Journal of the Royal Statistical Society*, 1895, and *Economic Journal*, 1898) in including Bradford. For the changes for women and men separately, the tables given on the previous pages should be consulted.

My thanks are due to Mr. G. H. Wood for help in the collection of the material for this inquiry.

III.—*The Suspension of the Berlin Produce Exchange: A Correction.*

By R. H. Hooker, M.A.

I much regret to find that, in carrying out some necessary corrections in the above paper, as a result of criticisms in the course of the discussion, a serious error has been introduced. In the hurry due to the endeavour not to delay the issue of the last number of the *Journal*, a portion of the paper has been over-corrected, with the result that three paragraphs, beginning with, "It may not be out of place . . ." on p. 595, are altogether wrong. It was not intended to discuss the influence of "futures" upon "spot" prices, or *vice versâ*, but to meet the allegation sometimes made, that the price of wheat for immediate delivery depends upon the price fixed for delivery some months ahead. [It is only due to my critics to state that this was not clear in the paper as originally read.] *E.g.*, I have, I think, seen it somewhere stated that prices during harvest are regulated by the prices fixed for the following May. It is perhaps needless to state that the rest of the paper remains entirely unaffected.

The three paragraphs in question should read as follows:—

It may not be out of place to refer here to the statement frequently made, that prices for prompt delivery are ruled by those for future months. The connection between the two is extremely close, and it seems difficult to say that the one regulates the other. But in view of what is said above, I think there is quite as much ground for saying that prices for prompt delivery (spot, current or not later than post-current month futures) regulate distant futures—though I do not mean to exclude the influence of the latter upon the former. In this connection it may be noticed that in 1897 there was no rise in the price of wheat in the world's markets until July: in fact, the minimum price of the year occurred in that month, the price having fallen gradually, but very slightly, since January, and evidently depending upon the supply of the current cereal year. And the prices for September—December delivery were quoted no higher: no account was taken of a forthcoming deficiency. Yet two months afterwards the price, spot and futures alike, had risen by more than 2*s.* per cental. It was not until the new wheat had practically come in that the price rose. In 1896 no rise in price took place until September. Again, during May, 1897, there were reports of great damage to crops in France. This could not be expected to materially affect current prices,[11] and I can find no reflection of the storm in the price of futures. It would be idle to deny that false rumours are frequently—shall I say, constantly?—set afloat on the Exchanges; but in this instance the French crop did prove short, and the shortness certainly seems to have been in part attributable to the damage during May.

The Leiter corner is another instance of distant futures being governed by cash. It was perfectly well known that the corner applied only to May wheat, yet the price for September and December (1898) rose when cash rose (though, of course, not to the same extent), and fell with it in June. There was at that time nothing to indicate that the harvest of 1898 would be short, and there was no reason, apart from the rise in May wheat, why prices for September delivery should have risen between March and May. I have thought it of interest to reproduce in a diagram the daily prices of wheat at Chicago (as well as spot prices at Berlin and Liverpool) during the months of April, May, and June, 1898. This illustrates the movements just explained, and is also an extreme instance of the greater relative stability of distant futures.

These examples, I think, afford some ground for the opinion that prices for prompt delivery govern those for future delivery as much as *vice versâ*.

IV.—*Commercial History and Review of* 1901.

The following is taken from the Supplement to the *Economist* of 22nd February, 1902, in continuation of similar extracts for previous years :—

"*Year* 1901. *Its Commercial and Financial Record.*

"The ebb in the tide of commercial and industrial activity, which we referred to when writing last year as having set in during the later months of the year 1900, continued with more or less force during the whole of the past year. The unexpected continuance of the war in South Africa throughout the year involved the employment of large numbers of men, both from the Mother Country and the Colonies, in military operations, a considerable proportion of whom would otherwise have been engaged in productive occupations. As regards our home industries, nevertheless, it would be inexact to speak of the year 1901 as a period of absolute depression, since, as will appear from the statistics quoted further on, the decline was largely in prices, the volume of trade, while not approaching the standard of extreme activity reached in 1899, being considerably above the level of an average year. The continuous decline in the prices of commodities, accompanied, as it necessarily was, by reductions in the wages of the working population, probably gave rise to an impression of greater depression than actually prevailed, or than is borne out by the data to be obtained from statistics and other evidence. The death of Queen Victoria, in the early days of the year, and the period of national mourning which followed, deepened the sentimental feeling of depression, and no doubt did cause real loss in certain trades. The most prominent feature in the movement of prices was the decline in the cost of coal, which had a distinctly beneficial effect upon the numerous industries in which the price of fuel is an important factor in the cost of production. It was, for instance, the almost prohibitive price to which coal had risen which brought about the breakdown in the trade boom of 1899-1900, and its return to a more normal level has given a fresh stimulus to our iron and steel industries, in which the supply and price of coal is a vital element. In regard to these trades, there has been much talk of pending disaster from foreign competition, first Germany and then the United States being the source from which the invasion was to come that would sweep our iron manufacturing industries from the field. It is usually observed that periods of activity or stagnation in trade affect all the industrial nations in common, and this was so with the expansion in iron and steel, which came to an end about the middle of 1900. Last year, however, the industrial conditions in the three rival countries differed entirely. Germany underwent a spell of intense depression, the result of too rapid expansion, over-production, and over-speculation in the preceding year. The inflation was greatly fostered by the facilities offered by the banks, several of which came to grief as a result of their operations in industrial share issues. Her competition was rendered somewhat formidable from the fact that her manufacturers were compelled to get rid of their surplus production in order to keep going at all, and often shipped it abroad to sell for what it would fetch. The United States, on the other hand, where the first sharp set back occurred early in 1900, enjoyed a recovery; and so keen was the home demand for her products that it is stated foreign orders could not be accepted. That may be true to an extent, since, as in the case of Germany, it is in periods of depression and over-production that her competition is most felt. The year was notable for the formation of the United States Steel Corporation, the 'Great Billion-Dollar Trust,' as it is called. Its operations have hitherto been very successful, and it claims that its purpose is to keep prices steady, neither taking advantage of excessive demand to enhance its profits, nor allowing prices to fall below a remunerative level in periods of depression. Its experience, however, is at present of good times only, and it remains to be seen how its virtuous resolutions will stand the stress of adversity. This country's iron and steel industries appear to have occupied a position midway between Germany and the United States, being neither very depressed nor very expansive. The competition of neither of the rivals has been very seriously felt, except, perhaps, in certain foreign markets, where they have had the advantage of greater proximity. The gradual settlement of China has been beneficial to our trade, more particularly in regard to cotton manufactures; and it is gratifying to record, amid the jealousies and animosities that have been engendered in the course of the scramble for the trade of the Yellow Empire, so distinct a recovery. Our cotton manufacturers, in fact, enjoyed a tolerably good year, India, though not entirely free from the effects of the late famine, being able to purchase more nearly up to her normal standard. Probably the most unsatisfactory of all our staple industries were the woollen and worsted trades. The almost entire closing of the American market by the operation of the tariff, and the immense supplies of wool from Australasia, Argentina, and South Africa, from sheep which are raised mainly for the sake of the mutton, have greatly disorganised the trade, which must adapt itself to the new conditions, and find fresh markets, if it is to regain a position of comparitive prosperity.

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[11] Except to the extent that a probable short harvest would involve greater reliance on stocks left over from the previous season, and so tempt owners to hold the wheat in hand.

"The following is a comparison of the value of our foreign trade in 1901 with that of 1900:—

	1901.	1900.	Increase or Decrease.	
			Amount.	Per Cent.
	£	£	£	
Imports	522,238,986	523,075,163	− 836,177	0·2
Exports of home products (including new ships)	280,498,889	291,191,996	−10,693,107	3·7
Re-exports of foreign and colonial merchandise	67,846,843	63,181,758	+ 4,665,085	7·4
Total trade	870,584,718	877,448,917	− 6,864,199	0·8

"The figures here given look very unsatisfactory, since even the imports were not fully maintained in value, while our exports show a very heavy shrinkage. The comparison in this instance, however, affords an example of the caution with which even statistics apparently of the most solid kind should be accepted at their face value. No one would imagine from a first glance at the totals that our foreign trade in both directions was actually larger in 1901 than in 1900. Yet this was indubitably the case, as a reference to the tables given in the appendix will abundantly prove. These show how much of the increase or decrease in the returns of 1901 as compared with the previous year is due to variations in quantity and value respectively. In regard to the imports of the year 1901, the calculations demonstrate that if we had paid for them at the same rate as in 1900, they would have cost more than the total for that year, and that, measured by quantities alone, our imports were larger by 2·45 per cent. than in 1900. The following is a percentage statement of the increase or decrease in our foreign trade, as measured by quantities alone, in the past few years:—

Volume of our Foreign Trade. Increase or Decrease per Cent. as compared with previous Years.

	Imports Retained for Home Consumption.	Exports of Home Produce.	Imports and Exports.
	Per cnt.	Per cnt.	Per cnt.
1901	+ 2·45	+ 1·46	+ 2·06
'00	+ 1·34	− 3·75	− 0·62
1899	+ 0·72	+ 2·68	+ 1·43
'98	+ 4·59	− 0·14	+ 2·82
'97	+ 1·64	− 1·29	+ 0·51
'96	+ 6·06	+ 4·87	+ 5·50
'95	+ 5·54	+ 8·57	+ 6·66

There was thus, in what has been regarded as a year of pronounced shrinkage in foreign trade, an increase in volume all round. If we had received for our exports of home products the same prices as were paid in the previous year, the total value would have been larger by a sum equal to 1·46 per cent. The increase in our total foreign trade, exclusive of re-exports, was 2·06 per cent. We imported larger quantities of almost every description of food and drink except tea, which fell off moderately in quantity and very heavily in price. The imposition of the duty on sugar did not check the imports, which, in fact, expanded sufficiently to offset a decline in average prices, and the total value consequently showed but little difference as compared with 1900. We imported more raw metals, a decline in value being entirely due to lower prices; and in textiles there was a specially heavy decline in the value of wool, almost offset by an increase in the quantity received. The chief feature among exports was the falling off in the quantity of coal shipped and the enormous decrease in its value owing to lower prices. The actual decrease in value as compared with 1900 was 8,283,000*l.*, and of this only 1,953,000*l.* was due to a reduction in the quantity shipped, lower prices accounting for 6,330,000*l.* In metals, again, the total decrease was 7,698,000*l.*, and of this only 1,179,003*l.* occurred in consequence of smaller quantities, and 6,519,000*l.* was owing to lower prices. In textiles, average values were more nearly on a level with the previous year, the large increase in the value of cotton exports, and a reduction in the value of woollen goods, being in each case almost entirely due to variations in the actual volume of business.

"There are, unfortunately, no statistics available which determine so precisely the condition of our home trade as do the Trade and Navigation Returns those of our over-sea commerce. It is possible, therefore, only to form a general opinion as to the comparative activity of the home markets, and one of the chief evidences relied upon for this purpose is derived from the returns of railway traffic. Even these are only an approximate guide to home trade, since they are, of course, influenced by the condition of foreign trade also. In Appendix B will be found tables giving the returns of fifteen principal English railways, of which the following is a summary for the two half-years:—

	Passengers and Parcels.		Merchandise.		Minerals.	
	1901.	1900.	1901.	1900.	1901.	1900.
	£	£	£	£	£	£
First six months ..	16,438,400	15,985,600	11,351,500	11,442,500	8,074,000	8,582,800
Second ,, ...	19,723,600	19,534,400	11,909,000	11,681,600	8,570,700	8,535,500
Total for year ...	36,162,000	35,520,000	23,260,500	23,134,100	16,644,700	17,118,300
Increase or decrease first six months	+ 452,800	= 2·8%	– 91,000	= 0·8%	– 508,800	= 5·9%
Increase or decrease second six months	+ 189,200	= 1·0%	+ 227,400	= 1·9%	+ 35,200	= 0·4%
Total increase or decrease for year	+ 642,000	= 0·2%	+ 136,400	= 0·6%	– 473,600	= 2·8%

"Apart from the heavy falling off in mineral traffic during the first half of the year, which was largely due, no doubt, to the shrinkage in coal exports, the figures indicate a stationary condition of affairs, and, with a growing population, stagnation means retrogression. There were symptoms of improvement in the second period, which might be partly ascribed to the fact that comparison is with a period when reaction had already begun to make itself distinctly manifest. Another source from which evidence may be gathered as to the volume of trade between different portions of the United Kingdom, is the record of the tonnage of vessels engaged in the coasting trade, and this also indicates some shrinkage, the figures comparing with the previous year thus:—

Tonnage of Vessels Engaged in the Coasting Trade.

	1901.	1900.	Decrease.
	Tons.	Tons.	Tons.
Entered	30,557,800	30,761,900	204,100
Cleared	30,216,500	30,323,200	106,700

"Similar evidence of a reduced volume of transactions, particularly when measured by a monetary standard alone, is afforded by the totals of bankers' clearings in London and the provinces, of which the following is a summary:—

Clearing Returns.

	1901.	1900.	Increase or Decrease.	
			Amount.	Per Cent.
	£	£	£	
London Clearing House (exclusive of Stock Exchange and Consols pay days)	7,494,498,000	7,182,474,000	+ 312,024,000	4·34
Manchester	236,242,100	248,750,600	− 12,508,500	5·03
Liverpool	158,875,000	167,735,700	− 8,860,700	5·28
Newcastle	82,848,200	85,582,800	− 2,734,600	5·97
Birmingham	53,257,500	53,371,900	− 114,400	0·21
Bristol	29,408,500	28,959,300	+ 449,200	1·55

The clearings on Stock Exchange and Consols pay-days are excluded from the London returns, as these do not represent trade transactions. Apart from these, however, the London returns were swollen by the large financial operations of the Government. The provincial clearings are undoubtedly a truer guide to the volume of purely business transactions, and these fully bear out the statement we put forward when writing twelve months ago, that a fall in prices must necessarily cause a shrinkage in the amount of trade clearings, since, even were the exchange of commodities as large as before, it would be effected with a reduced amount of money.

"Dealing specifically with the prices of commodities, we can measure—by means of our index number, which shows the average movement in a number of selected commodities—the actual variations during the year 1901, and for several preceding years:—

	'Index Number,' representing the Combined Prices of Twenty-two Leading Commodities.		'Index Number,' representing the Combined Prices of Twenty-two Leading Commodities.
1st January, 1902	1948	1st July, 1898	1915
" July, '01	2007	" January, '98	1890
" January, '01	2126	" July, '97	1885
" July, '00	2211	" January, '97	1950
" January, '00	2145	" " '96	1999
" July, 1899	2028	" " '95	1923
" January, '99	1918	" " '94	2082

"The fall was continuous throughout the year, but was most pronounced in the first three months, in which period the index number dropped 107 points out of the total of 178 points lost during the year, the latter figure being equal to 8 per cent. It will be seen that even down to the present the average range of prices is higher than before the trade boom commenced, since the index number in 1897 and 1898 fell to below 1900. The decline during the year was naturally most pronounced in coal and metals, which rose to something like famine prices during the year 1900. Pig-iron warrants at Glasgow were maintained at a fictitious height until quite late in the year. An enormous fall, also the result of market manipulation chiefly engineered in the United States, took place in the price of copper, the quotation for G.M.B. at the end of 1901 being 48*l.* per ton as compared with 72*l.* 7*s.* 6*d.* on 1st January. Tin and lead also suffered a heavy relapse during the year. Among textiles, cotton was lower at the end than at the beginning of the year, when it happened to be at an exceptionally high figure, and while fluctuating considerably in the interval, the average was well above the normal range. Wool was very depressed, almost throughout, but had recovered to some extent in the last quarter. Wheat varied but little, and was only a few pence higher at the end than at the beginning of the year, and other foodstuffs also fluctuated very slightly. It will be seen from the appendix that we obtained the commodities imported from abroad at prices, on the average, 3·69 per cent. lower than those of 1900, and we obtained for British products and manufactures sent abroad prices representing 5·14 per cent. less than they would have brought at the prices of the preceding year. The decline, taking imports and exports together, amounted to 4·25 per cent.

Prices of Imports and Exports. Average Rise or Fall as compared with previous Years.

	Imports Retained for Home Consumption.	Exports of Home Produce.	Imports and Exports.
	Per cnt.	Per cnt.	Per cnt.
1901	− 3·69	− 5·14	− 4·25
'00	+ 8·20	+ 14·48	+ 10·55
1899	+ 1·78	+ 6·62	+ 3·56
'98	+ 0·24	− 0·26	− 0·07
'97	− 0·12	− 1·11	− 0·51
'96	+ 1·85	+ 1·24	+ 1·63
'95	− 3·54	− 3·48	− 3·52

"The amount paid for imports retained in this country for consumption in 1901 was 454,392,000*l.*, whereas if we had paid for them the same average prices as in 1900 they would have cost us 471,803,000*l.* Thus owing to lower prices there was a reduction in the cost of our imports of 17,411,000*l.* And a similar calculation with regard to our exports shows a more pronounced decline in prices. Our total exports of British products last year are valued at 280,499,000*l.* If, however, we had got for them the same average prices as in 1900 they would have fetched 295,703,000*l.*, so that there was a decrease in aggregate value of 15,204,000*l.*—of which decrease 6,330,000*l.* was in coal, and 6,519,000*l.* in metals and machinery, most other articles showing comparatively slight changes.

"The extra burden of taxation which has had to be borne by the country in consequence of the heavy war expenditure did not fall very severely upon the masses of the working population. In fact, practically the only contribution they had to make was in the form of paying a higher price for their sugar, the duty imposed representing about one halfpenny per lb. on the retail price. Their purchasing power was, however, somewhat curtailed by the less active demand for labour, and a reduction in the average rate of remuneration. The Labour Department of the Board of Trade reports that at the end of the year the proportion of trade union members unemployed was 4·6 per cent. as compared with 4 per cent. at the end of 1900, while the average of unemployed for the whole year was 3·8 per cent., against 2·9 per cent. in 1900, and 2·4 per cent. in 1899. The figure for 1901, however, compares favourably with the mean for the ten years 1892-1901, which was 4·6 per cent. In regard to wages the Labour Department reports, 'The net effect of all the changes in rates of wages in each of the five years 1896-1900, was an increase, the last year of the period being especially remarkable for the magnitude of the rise in the wages of miners and metal workers. The tendency, however, was reversed in 1901, and the net effect of all the changes recorded in the year just passed was a fall amounting in the aggregate to 78,516*l.* per week, or an average of 1*s.* 9*d.* per head of the 901,820 workpeople affected. The decline has, however, been entirely confined to the mining and metal trades, in which there has been a considerable fall of prices. Apart from those groups of trades, the net effect of all the changes of the year was a small increase.'

"The net result of the changes recorded in the year is shown in the following statement, the figures for each of the previous five years being also given for the purpose of comparison:—

Year.	Total Number of Individuals Affected by Changes in Rates of Wages.	Net Result on Weekly Wages of those Affected by Changes.			
		Total Amount.	Average per Head.		
		£		*s.*	*d.*
1901	901,820	– 78,516	–	1	9
'00	1,135,786	+ 209,373	+	3	8¼
1899	1,175,576	+ 90,905	+	1	6½
'98	1,015,169	+ 80,815	+	1	7
'97	597,444	+ 31,507	+	1	–¾
'96	607,654	+ 26,592	+	0	10½

"The mining and metal trade workers could perhaps afford to bear the reduction, since they secured the bulk of the advance in the previous year. It is satisfactory to record that the reductions were arranged, as were the previous advances, without the occurrence of any large dispute involving the stoppage of work. The Labour Department on this point remarks: 'Of the 901,820 workpeople whose wages were changed, only 13,676, or 1·5 per cent., were affected by disputes causing stoppage of work.' The report also shows a considerable increase in the proportion of workpeople whose wages-changes were settled by conciliation boards, mediation, and arbitration. The aggregate duration of the disputes was greater in 1901 than in either of the two preceding years, though considerably below the average of the years 1893-1900. The total number of working days lost through these disputes was 3,930,841, as compared with 3,152,694 days in

1900, and of the 175,000 persons affected no less than 110,000 belonged to the mining group of trades, who lost 1,875,000 days out of the total. Another gauge of the purchasing power of the working classes is to be found in the consumption of dutiable articles, and in this respect the record is rather conflicting, since while the consumption of tea, coffee, and cocoa, was considerably larger than in 1900, there was a falling off in the home consumption of tobacco and intoxicating liquors. The latter may be due partly to the continued absence of a large number of men in South Africa, and is not, except from the point of view of the Chancellor of the Exchequer, a regrettable circumstance.

Quantities Retained for Home Consumption.

		1901.	1900.	1899.
Tea	lbs.	255,873,000	249,792,000	242,561,000
Cocoa	,,	50,046,000	44,720,000	39,540,000
Coffee	cwts.	332,000	284,000	268,000
Tobacco	lbs.	80,690,000	82,091,000	78,548,000
Wines	galls.	15,281,000	15,880,000	16,661,000
Spirits, home	proof galls.	36,372,000	37,125,000	35,770,000
,, foreign....	galls.	8,880,000	8,806,000	8,689,000
Beer	barrels	35,509,000	36,077,000	36,841,000

"The year was not a good one for British Agriculture, the unfavourable climatic conditions resulting in a harvest much below the average in regard to cereals, almost the only good returns having been obtained from hops. The dry weather caused a shortage in hay and forage, and, owing to this, stock was in some cases forced on the marked at unremunerative prices. On the whole, however, there was very little difference in the average price of wheat, and the average for cattle was maintained at the high level of preceding years. The supply of labour was somewhat better than in 1900; in fact, casual labourers had some difficulty in finding full employment owing to the light crops.

Gazette Average Price of Wheat (per Imperial Quarter) in United Kingdom immediately after Harvest, 1893-99, *and Total Average Gazette Price of Calendar Years.*

Periods.	1901.		1900.		1899.		1898.		1897.		1896.		1895.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
After harvest	27	–	28	8	25	–	28	1	33	7	23	1	23	1
Calendar year average	26	9	26	11	25	8	34	–	30	2	26	2	23	1

Comparative Gazette Prices of Grain.

Week.	Wheat.						Barley.						Oats.					
	1901.		1900.		1899.		1901.		1900.		1899.		1901.		1900.		1899.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
July 27	27	3	29	3	25	2	22	1	24	4	22	5	19	4	19	9	18	2
Aug. 3	27	6	28	10	24	10	23	1	23	10	20	9	20	–	19	4	18	–
10	27	7	28	7	24	8	22	1	23	7	22	6	19	4	19	8	17	9
17	27	4	28	10	24	7	27	2	23	3	26	11	18	9	19	11	17	4
24	27	3	28	10	24	7	23	7	24	10	26	5	18	1	18	8	17	4
31	27	–	28	8	25	–	24	3	25	2	25	10	17	10	18	1	16	7
Sept. 7	26	5	28	7	25	5	25	1	25	8	26	5	17	6	17	10	16	6
14	26	2	28	4	25	4	24	11	25	4	27	1	17	4	17	1	16	2
21	26	–	28	4	25	4	25	5	26	–	27	4	17	4	17	1	16	1
28	25	10	28	9	25	6	25	10	26	1	26	11	17	2	17	2	16	5
Oct. 5	25	8	28	9	26	–	26	3	26	2	28	–	17	7	16	10	16	5
12	25	9	28	9	27	3	26	5	26	2	27	9	17	6	17	1	16	5
19	25	10	28	4	28	2	26	8	26	5	27	6	17	8	16	11	16	10
26	25	11	27	11	28	1	26	10	26	3	27	4	17	5	16	11	16	3
Nov. 2	26	2	27	5	27	2	26	10	26	3	27	2	17	7	16	10	16	7
9	26	6	27	3	26	7	27	–	25	11	26	9	17	8	16	10	16	5
16	26	9	27	1	26	1	26	9	25	8	26	4	18	3	17	2	16	7
23	27	1	27	2	25	8	26	10	25	10	26	2	18	7	17	1	16	7
30	27	1	27	–	25	7	26	9	25	9	25	10	18	9	17	2	16	6
Dec. 7	27	1	26	10	25	7	26	7	25	11	25	10	19	–	17	1	16	5
14	27	2	26	9	25	4	25	10	25	7	25	7	17	1	17	4	16	1
21	27	7	26	7	25	6	26	8	25	7	25	10	19	8	17	1	16	0
28	27	7	26	4	25	9	26	8	25	11	25	5	19	10	17	2	16	2

"The competition of the United States and Germany, both in foreign markets and at home, has been much discussed, but has hardly aroused so much trepidation as in previous years. Some shipments of American coal have been made to the Mediterranean and even to Germany, but it has so far made no serious inroad on the markets where British coal has hitherto been supreme. It is with regard to iron and steel manufactures, however, that American manufacturers have been most aggressive. Undoubtedly there was a remarkable recovery in that branch of manufacture in the United States last year, but it seems to have been due mainly to an increased home demand, since the exports of iron and steel fell off considerably in 1901, as did those of copper, and in spite of an increase of nearly 7 million £ in the value of exports of natural products, the aggregate exports receded from 295,589,000*l.* in 1900, to 293,103,000*l.* in 1901. Probably the competition of Germany has been more felt, as her manufacturers have sold their products abroad in some instances below cost, owing to the industrial breakdown there. On the whole, British manufacturers appear to have fully maintained their position, and have in some cases recovered control of markets from which they had been ousted in previous years.

"The money market was tolerably steady throughout the year, the chief pinch occurring in the first few days of January. A mistake was made in not advancing the Bank rate in December, 1900, which had to be redeemed by hurried measures to protect the reserve and advancing the Bank rate at the unusual period of the second week in January. The advance from 4 to 5 per cent. took place on 9th January. The Reserve was considerably augmented towards the end of that month, and on 6th February and 20th February successive reductions of ½ per cent. were made, and on 6th and 13th June similar reductions were found possible, bringing the official minimum to 3 per cent. That moderate rate proved sufficient to carry on with, in spite of occasional spells of stringency, until 30th October, when, as a considerable sum in gold had been taken for abroad, and the exchanges were adverse, the Bank rate was moved up from 3 to 4 per cent. The movement had the effect of checking the withdrawals to some extent, though there was a small but persistent flow of gold outwards right up to the end of the year. All these movements, however, were of a normal character, and the steadiness of the market may be ascribed to the fact that the Government provided for its wants up to the end of the year by a big issue of Consols, and, the dates when the instalments became due being fixed in advance, preparations were made to meet them and there was no uncertainty, such as existed in 1900, as to how much the Government would need to borrow and when it would seek to place its issues on the market. Rates on the average were appreciably lower than in the previous year, as will be seen from the following comparison:—

	1901.	1900.	1899.	1898.
Changes in bank rate	six	six	six	four
	per cnt.	per cnt.	per cnt.	per cnt.
Highest bank rate	5	6	6	4
Lowest ,, ...	3	3	3	2½
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Average bank rate	3 14 5	3 19 2	3 13 6	3 4 9
Average market rate for best three months' bills	3 3 3	3 13 3	3 5 –	2 11 10
Average allowance on deposits	2 4 5	2 9 –	2 3 6	1 13 –
Profit margin	– 18 10	1 4 3	1 1 6	– 18 10

"The year was, it will be observed, much less favourable for banking operations than its predecessor, since the banks obtained a lower average rate upon their non-interest bearing funds and secured a much smaller margin of profit on deposit money. Their profits for the year consequently showed an appreciable diminution, though in the great majority of cases they paid the same rates of dividend as in the previous year. Allocations to reserves had, however, to be curtailed, since it was necessary to make further provision for the depreciation in Consols and other first-class securities.

European Rates of Discount per Cent. per Annum, 1901.

Cities.	Beginning of Months of 1901.												
	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Avge.
	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.
London.													
Bank rate	5	5	4	4	4	4	3	3	3	3	4	4	3·72
Open market	4⅜	4⅛	3⅞	3⅛	3½	3⅝	2⅜	2$\frac{9}{16}$	2$\frac{5}{16}$	2⅝	3¼	3⅜	3·16
Paris.													
Bank rate	3	3	3	3	3	3	3	3	3	3	3	3	3·00
Open market	3	2$\frac{13}{16}$	2½	2$\frac{13}{16}$	2⅜	2½	2	2	1¾	1⅝	3	2⅝	2·44
Vienna.													
Bank rate	4½	4½	4	4	4	4	4	4	4	4	4	4	4·08
Open market	4⅛	4	3¾	3¾	3⅝	3¼	3⅜	3⅜	3⅞	3⅞	4	3½	3·74
Berlin.													
Bank rate ...	5	5	4½	4½	4	4	3½	3½	3½	4	4	4	4·12
Open market	3⅞	3⅛	3⅜	3⅜	3	3⅛	3	2¼	2½	2¾	2⅞	2$\frac{15}{16}$	3·04
Frankfort.													
Bank rate	5	5	4½	4½	4	4	3½	3½	3½	4	4	4	4·12
Open market	3⅞	3$\frac{5}{16}$	3⅜	3⅜	3	3⅛	3	2¼	2½	2¾	2⅞	2$\frac{15}{16}$	3·05
Amsterdam.													
Bank rate ...	3½	3½	3½	3½	3½	3½	3	3	3	3	3	3	3·25
Open market	3½	3⅜	3¼	3¼	3⅜	3¼	2¾	2¾	2½	2½	2⅞	2¾	3·01
Brussels.													
Bank rate	4	4	3½	3½	3½	3½	3	3	3	3	3	3	3·33
Open market	3¾	3⅜	3	2¾	2¾	2⅜	2⅜	2⅜	2¼	2¼	2⅜	2¼	2·68
Hamburg.													
Bank rate	5	5	4½	4½	4	4	3½	3½	3½	4	4	4	4·12
Open market	3⅞	3¼	3⅜	3⅜	3	3⅛	3	2¼	2½	2¾	2⅞	2$\frac{15}{16}$	3·05
St. Petersburg													
Bank rate	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5·5

"The silver market is thus reported upon by Messrs. Pixley and Abell:—'For the first three weeks of the year silver remained steady at about 29½*d.* per oz., but weakness then became apparent and a downward movement began, which continued more or less throughout the remainder of the year. The Indian Government was at first a large buyer, but its purchases gradually decreased until, by the end of March, when the currency had been placed on a satisfactory basis, buying for this quarter ceased altogether. Speculative and other holders, who had been refusing to part with their silver in the hope that the Indian Government would continue to be a large buyer, finding that the market would receive no further help from this source, then began to liquidate their holdings and thus accentuated the distrust felt towards the metal. In May it became known that the American smelters and refiners were combining their interests with the object of controlling both output and prices. This news led to considerable buying by speculators, who anticipated a strong upward movement similar to that which had taken place in copper. These expectations, however, were not realised, as shipments to India fell off and other inquiries were small, whilst the American sellers were never able to dispose of the whole of their output. During July and the following months the price of silver remained fairly steady at about 27*d.*, and the American sellers endeavoured by not pressing sales to prevent any fall below that figure, but eventually it became evident that these tactics were unavailing, and by 3rd December the price had fallen to $24\frac{15}{16}$*d.*, the lowest since 1897. The weakness of the market had during November been accentuated by the serious fall that took place in copper, by the dearness of money in New York, and by the advance in the sight exchange there to 4·87$\frac{3}{4}$. The month of December saw a good general demand, especially towards the close, and prices showed some improvement, closing at $25\frac{3}{4}$*d.* The total imports from the States were about 9,750,000*l.* India bought fairly well during the first half of the year, but later only orders for the Straits were to be had, mostly for forward delivery. The total sent to India is about a million over the figures of 1900—7,500,000*l.* against 6,500,000*l.*; but China shows a falling off of about 600,000*l.* The highest price was on 1st January, $29\frac{9}{16}$*d.*; the lowest on 3rd December, $24\frac{15}{16}$*d.*; the average price, 27·1868*d.*, or, say, $27\frac{3}{16}$*d.*

"During January and February there were very few sales of Mexican dollars, but in March there was a demand for Mexico consequent on dear money there, which caused them to advance until they were actually quoted over the price of silver. A fair amount was shipped to Mexico, and the premium lasted until towards the end of May. From then until well into August the market was more often nominal than not, when there were inquiries for the Philippines, which resulted in good sales. The Straits participated in the demand to some extent, but nearly all orders ceased before the end of the year, when the rise in the Mexican exchange permitted of dollars being profitably diverted to Mexico.

Monthly Fluctuations in Price of Bar Silver.

	1901.		1900.		1899.		1898.		1897.	
	d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
January	$29\frac{9}{16}$	$27\frac{3}{4}$	$27\frac{11}{16}$	27	$27\frac{5}{8}$	$27\frac{1}{4}$	$26\frac{7}{8}$	$26\frac{1}{8}$	$29\frac{13}{16}$	$29\frac{11}{16}$
February........	$28\frac{1}{2}$	$27\frac{7}{8}$	$27\frac{3}{4}$	$27\frac{5}{16}$	$27\frac{1}{2}$	$27\frac{3}{8}$	$26\frac{1}{4}$	$25\frac{5}{8}$	$29\frac{3}{4}$	$29\frac{11}{16}$
March	$28\frac{3}{16}$	$27\frac{5}{16}$	$27\frac{11}{16}$	$27\frac{7}{16}$	$27\frac{9}{16}$	$27\frac{3}{8}$	$26\frac{1}{16}$	25	$29\frac{5}{8}$	$28\frac{5}{16}$
April	$27\frac{15}{16}$	$26\frac{15}{16}$	$27\frac{1}{2}$	$27\frac{5}{16}$	$28\frac{7}{8}$	$27\frac{3}{8}$	$26\frac{5}{16}$	$25\frac{11}{16}$	$28\frac{1}{2}$	$28\frac{3}{16}$
May	$27\frac{5}{8}$	$27\frac{3}{16}$	$27\frac{5}{8}$	$27\frac{1}{2}$	$28\frac{3}{4}$	28	$26\frac{7}{8}$	$25\frac{7}{8}$	$28\frac{3}{16}$	$27\frac{1}{2}$
June	$27\frac{9}{16}$	$27\frac{1}{4}$	$28\frac{9}{16}$	$27\frac{9}{16}$	28	$27\frac{11}{16}$	$27\frac{1}{2}$	$26\frac{11}{16}$	$27\frac{3}{4}$	$27\frac{1}{8}$
July................	$27\frac{1}{4}$	$26\frac{13}{16}$	$28\frac{9}{16}$	$27\frac{3}{4}$	$27\frac{3}{4}$	$27\frac{3}{8}$	$27\frac{7}{8}$	27	$27\frac{11}{16}$	$26\frac{3}{8}$
August	$27\frac{1}{8}$	$26\frac{3}{4}$	$28\frac{7}{16}$	$27\frac{15}{16}$	$27\frac{13}{16}$	$27\frac{1}{8}$	$27\frac{13}{16}$	$27\frac{1}{8}$	$26\frac{1}{2}$	$23\frac{3}{4}$
September	27	$26\frac{7}{8}$	$29\frac{1}{4}$	$28\frac{7}{16}$	$27\frac{3}{8}$	$26\frac{15}{16}$	$28\frac{5}{16}$	$27\frac{11}{16}$	$27\frac{1}{4}$	$23\frac{3}{4}$
October	$26\frac{7}{8}$	$26\frac{3}{8}$	$30\frac{3}{16}$	$29\frac{1}{8}$	$26\frac{15}{16}$	$26\frac{5}{8}$	$28\frac{1}{4}$	$27\frac{3}{16}$	$27\frac{1}{2}$	$25\frac{9}{16}$
November	$26\frac{1}{8}$	$25\frac{3}{8}$	$29\frac{15}{16}$	$29\frac{7}{16}$	$27\frac{5}{16}$	$26\frac{11}{16}$	$28\frac{5}{16}$	$27\frac{1}{4}$	$27\frac{1}{2}$	$26\frac{3}{8}$
December	$25\frac{3}{4}$	$24\frac{15}{16}$	$29\frac{7}{8}$	$29\frac{1}{2}$	$27\frac{5}{16}$	$26\frac{15}{16}$	$27\frac{5}{8}$	$27\frac{1}{4}$	$27\frac{3}{4}$	$25\frac{15}{16}$
Yearly avge.	$27\frac{3}{16}$		$28\frac{1}{4}$		$27\frac{7}{16}$		$26\frac{15}{16}$		$27\frac{9}{16}$	
Highest price	$29\frac{9}{16}$		$30\frac{3}{16}$		$28\frac{7}{8}$		$28\frac{5}{16}$		$29\frac{13}{16}$	
Lowest ,,	$24\frac{15}{16}$		27		$26\frac{5}{8}$		25		$23\frac{3}{4}$	

"But for the borrowing by the British Government, and to a smaller extent by Colonial Governments and municipal authorities, the capital applications of the year 1901 would have given a very small total indeed. Swollen by these items, however, the aggregate amounted to a sum of 159,338,000*l.*, as compared with 165,499,000*l.*, and with that exception was the largest total reached in the previous ten years, or, in fact, for any year since the record was taken. The following is a statement of capital applications, quarter by quarter, for the past five years:—

New Capital Applications.

[000's omitted.]

	1901.	1900.	1899.	1898.	1897.
	£	£	£	£	£
First quarter	35,044,	51,587,	39,416,	48,054,	28,116,
Second ,, ...	83,915,	31,189,	48,697,	38,157,	47,777,
Third ,, ...	19,029,	49,769,	19,291,	37,705,	31,874,
Fourth ,, ...	21,370,	32,954,	25,765,	27,257,	49,522,
	159,358,	165,499,	133,169,	150,173,	157,289,

"The following is a classification of the applications according to the various purposes for which public subscriptions were invited:—

Capital Applications in 1901.

	£
British Government loans	74,240,000
Colonial ,, ...	16,157,200
Foreign ,, ...	867,200
British municipal and county loans	6,836,100
Colonial and foreign corporations	2,895,200
British railways	10,340,400
Indian and colonial railways	3,077,600
Foreign railways	5,068,000
Mining companies—	
Australasian	746,400
South African	975,700
West ,, ...	1,705,800
Other mines	1,146,500
Exploration and financial	2,853,900
Breweries and distilleries	3,812,000
Merchants, importers, and exporters	1,447,700
Manufacturing	2,090,500
Stores and trading	1,566,300
Estate and land	1,142,500
Iron, coal, steel, and engineering	4,545,300
Electric lighting, power, &c.	4,674,800
Tramway and omnibus	1,971,900
Gas and water	1,544,000
Hotels, theatres, and entertainments	1,075,500
Patents and proprietary articles	2,123,800
Docks, harbours, and shipping	1,289,800
Banks and insurance	1,835,000
Miscellaneous	3,329,400
	159,358,500

"The borrowing for the British Government amounted in all to 74,240,000*l.*, of which 67,380,000*l.* was on account of the war, and the remainder was contained in two issues of Local Loans stock. The Australasian Colonies have been heavy borrowers, having raised about 14 million £, all in three per cent. stock. As indicated by the issue prices, the credit of New South Wales stands highest, at 94 per cent., and Western Australian lowest, at 91 per cent., Victoria, Queensland, Tasmania, and New Zealand offering their loans at prices ranging between these two extremes. British corporations have also borrowed a considerable sum, the aggregate amounting to 6,836,000*l.* The interest on these again was almost exclusively 3 per cent., the London County Council obtaining 98 for its stock, while the Borough of West Ham offered the same denomination at 92, and hardly succeeded in getting it at that. Other municipalities offered their stocks on fairly uniform terms, the prices ranging only from 94 to 95½. Foreign Governments have hardly appeared at all, the amount under that head being chiefly for bonds issued in connection with the Nile irrigation works, and guaranteed by the Egyptian Government, which is only nominally foreign. British railways appeared for a total of 10,340,400*l.*, mostly in the form of ordinary stock offered to existing shareholders. This is only the amount of which public notice was given, and there were, of course, creations of debenture and other stocks peddled on to the market, so that their amount or terms of issue could not be ascertained. Indian and Colonial railways are responsible for 3,077,600*l.*, the bulk of which was in East Indian debenture stock; while of 5,068,000*l.* for foreign railways, by far the larger proportion was raised by Argentine undertakings for extensions, amalgamations, and improvements. Coming to the company issues, these were on a very limited scale. New mining enterprises were confined to a few West African ventures and some copper mines, chiefly in Spain, the latter promotions being induced by the high price for copper early in the year. A few Westralian mines obtained money from their shareholders for further developments, but it was only towards the end of the year that the Transvaal companies began to apply for new capital. It is obvious that issues on that account will be very considerable in the current year. The industrial companies call for little attention, the total being small, and mainly made up of new issues by existing companies. Prominent among these was an offer of 1 million £ preference shares by the National Telephone Company, and new shares allotted by Vickers, Sons, and Maxim. As regards the new companies formed, the prominent items were Mann, Crossman, and Paulin among brewery undertakings, Clayton and Shuttleworth, engineers, and the London United Tramways Company.

"During the greater part of the year Stock Exchange transactions were upon a restricted scale, owing to the continuation of that apathy on the part of the public which was the leading characteristic of the preceding twelve months. In the earlier part of the year the 'boom' in American railroad securities practically absorbed speculative attention, but the rude shock administered to the market by the struggle for the voting control of the Northern Pacific, which led to the suspension of the 'buying in' rule on this side, brought the gamble to an abrupt termination; and since May 'Yankees' have been out of favour, though quotations have recovered the greater part of the shrinkage caused by the historic fight in New York. Towards the close of the year there was a distinct revival of interest in Rand gold issues and other South African shares, owing to the steady progress made in the resumption of gold mining operations. A small beginning was made in the Rand district in May, and in each month since the number of gold-producing companies was increased, and the output of the precious metal in the closing month of the year was equal to about one-eighth of the average obtained before the outbreak of hostilities. More or less in sympathy with Rand shares, Rhodesians and South African land and finance issues came into renewed speculative favour; but throughout the year Westralian and British Columbian mining shares suffered from the collapse of the London and Globe Groups and concerns, and the continued unsettlement in the affairs of their principal flotations—the Lake View Consols and the two Le Rois.

"Apart from the prolongation of the South African campaign, and occasional uneasiness caused by ebullitions of hostility to this country on the part of German and, to a less extent, other continental critics, the stock markets have been but little affected by political incidents, such as the withdrawal of the troops of the Allied Powers from China and the settlement of the indemnity, the French naval demonstration against Turkey, the German threats to Venezuela, the frontier disputes between Argentina and Chili, and the fresh agreement between this country and the United States in connection with the Isthmian Canal project. These incidents have had either a purely temporary influence or none at all, and the further small decline shown in the valuations of Stock Exchange securities as a whole has been due much more to uncertainty and lack of interest than to any feeling of depression. Taking the annual table prepared by the *Bankers' Magazine* as a guide, we find that the 325 securities included in the summary were valued on 18th December, 1900, at 3,101,795,000*l.*, and on 18th December, 1901, at 3,063,865,000*l.*, showing a decrease of 37,930,000*l.*, equal to 1·2 per cent. The table is given below:—

[000's omitted.]

Nominal Amount (Par Value)	Department, containing	Market Values.		Increase or Decrease.	
		18th Dec., 1901.	18th Dec., 1900.	Amount.	Per Cent.
£		£	£	£	
804,194,	14 British and Indian funds...	776,877,	803,372,	− 26,495,	3·3
36,379,	8 Corporation (U.K.) stocks	39,884,	39,627,	+ 257,	0·6
49,417,	11 Colonial Government stocks	51,751,	51,750,	+ 1,	....
29,823,	5 Ditto inscribed ditto	31,706,	31,571,	+ 135,	0·4
928,539,	30 Foreign Government ditto	830,044,	819,607,	+ 10,437,	1·3
213,007,	19 British Railway Ordinary	265,942,	290,266,	− 24,324,	8·4
171,118,	14 Ditto Debenture „	190,972,	192,175,	− 1,203,	0·6
128,803,	13 Ditto Preference „	170,607,	176,408,	− 5,801,	3·3
47,010,	7 Indian Railways „	59,562,	64,972,	− 5,410,	8·3
56,014,	8 Railways in British possessions Ordinary	35,812,	30,162,	+ 5,650,	18·7
89,000,	10 American railway shares....	104,396,	92,349,	+ 12,047,	13·1
59,545,	12 Ditto bonds (gold)	51,396,	48,995,	+ 2,401,	4·9
7,605,	5 Ditto bonds (sterling)	8,625,	8,759,	− 134,	1·5
19,516,	12 Foreign railways	15,409,	15,690,	− 281,	1·8
84,216,	9 Ditto obligations	61,538,	61,435,	+ 103,	0·2
	30 Bank shares—				
35,190,	10 British bank shares	47,992,	48,971,	− 979,	2·0
	4 Australasian bank shares	9,873,	9,481,	+ 392,	4·2
	6 Other colonial bank shares........	8,230,	7,476,	+ 754,	10·1
	10 Semi-foreign bank shares	15,062,	15,479,	− 417,	2·7
7,038,	8 Corporation stocks (colonial and foreign)	7,028,	7,244,	− 216,	3·0
6,167,	8 Financial, land..................	7,540,	7,599,	− 59,	0·8
10,842,	4 Gas....................................	29,768,	28,143,	+ 1,625,	5·8
3,956,	14 Insurance	17,392,	18,157,	− 765,	4·2
6,055,	7 Coal, iron, and steel...........	11,513,	13,644,	− 2,131,	15·7
20,716,	6 Canal and dock...................	68,164,	66,660,	+ 1,504,	2·3
4,529,	8 Breweries	11,390,	11,390,	....	....
9,944,	15 Commercial, industrial, &c.	35,052,	37,735,	− 2,683,	7·1
8,810,	10 Mines (chiefly South African)	50,492,	51,832,	− 1,340,	2·6
4,966,	8 Shipping	7,839,	7,716,	+ 123,	1·6
17,914,	9 Telegraph and telephone...	18,210,	18,700,	− 490,	2·6
4,066,	11 Tram and omnibus	3,729,	4,518,	− 789,	17·5
8,553,	10 Waterworks	20,070,	19,912,	+ 158,	0·8
2,868,932,	325 Totals	3,063,865,	3,101,795,	− 37,930,	1·2

"In the preceding twelve months the corresponding table exhibited a decline of 19,622,000*l.*, or 0·6 per cent., and it may be remembered that both in 1899 and in 1900 markets were adversely affected in the closing week or so of the year, upon the former occasion by unsatisfactory news from South Africa, and upon the latter by the collapse of the London and Globe Corporation and a sudden lifting of monetary rates. The table shows, as usual, however, that losses in some directions have been largely counterbalanced by gains in others, the net decline being a small one over such a huge mass of securities.

"British Government securities were adversely affected during the greater part of the year by the uncertainty prevailing as to the further borrowing requirements in connection with the South African campaign, but prices finished in 1901 substantially higher than the lowest points touched, the recovery following the issue of a further 60 million £ of Consols having been materially assisted in the closing months of the year by the almost uninterrupted succession of favourable reports from the seat of war. The fall in Consols amounted on balance to 3, the closing quotation of 94¼ comparing with 97¼ at the end of 1900, while the lowest price during the year was 91. The only exception to the general decline in the higher class of securities was Local Loans stock, which rose a couple of points in the twelve months. Colonial bonds exhibited some irregularity, Cape and Natal issues being more or less adversely affected by the prolongation of the war, while the establishment of the Australian Commonwealth and the admission of colonial securities, on the not very onerous conditions stipulated, to the trustee list improved the demand for Australasian bonds, though the improvement was to a certain extent neutralised by the several issues of new loans. British corporation stocks have been inactive, and the level of prices has declined in sympathy with the movements in Government bonds. In foreign Government securities the movements have been of an irregular character, but for the most part the variations have resulted in higher quotations. This has been especially the case in regard to Spanish, Italians, Egyptian Unified, and German Threes, among inter-Bourse securities, while the only noteworthy exception in that group has been the weakness of Greeks. Among South and Central American issues, Brazilians appreciated considerably on the resumption of specie payments on 1st July last, while the Argentine-Chilian frontier dispute caused a moderate lowering of Argentine prices, though Chilian bonds finished at a somewhat higher level than at the close of 1900.

"By far the most important decline in aggregate valuation has, it will be seen from the table given above, taken place in British railway securities, amounting to no less than 30,218,000*l.*, of which the ordinary stocks account for 24,324,000*l.* In the previous year the shrinkage in this group worked out at 44,522,000*l.*, so that in two years the total decline represented the enormous sum of 74,740,000*l.* The depreciation has been of an all-round character in the past twelve months, though it has been especially severe in the Southern passenger stocks, Great Easterns, North Easterns, and Lancashire and Yorkshire. It was due in the first half of the year to the continuation of the abnormally high price of fuel and the unsatisfactory dividends anticipated, and, unfortunately, only too fully realised; while in the second half the gross traffics exhibited a slackening tendency, and it was feared that the effect of cheaper coal would be to a large extent offset by increased expenses in other directions and the piling-up of fixed charges and rates and taxes. As a matter of fact, among the principal lines, only four were able to pay larger dividends for the second half of 1901 than for the corresponding period of 1900, and three had to submit to a further reduction. Towards the close of the year there was a fairly general recovery in home rails, but it was due to hopes which have not been fully realised. On the other hand, American railroad securities have exhibited a further substantial advance, notwithstanding the Northern Pacific *débacle* in May, the weakness of United States steel corporation issues, and the heavy fall in copper and Amalgamated Copper shares. Canadian Pacifics rose over 22 points in the course of the year, and there were less important advances in Grand Trunk issues; but most South and Central American railway securities have lost ground, and most Indian railway stocks have given way to a certain extent. In view of what has been said already, it is not to be wondered at that South African mining shares closed the year at higher prices than they began it, or that the opposite is true of Westralians. Copper shares fell heavily in the latter part of the year, owing to the difficulties of the American combine and the steady decline in the price of the metal, and most other descriptions of mining and kindred issues depreciated. Among breweries, the feature has been the further considerable fall in Allsopps and Watney, Combe, and Reid securities. Trust stocks have substantially improved, while iron, coal, tea, and London omnibus shares have fallen appreciably on reduced earnings and doubtful prospects.

APPENDIX (A.)—*Volume and Value of our Foreign Trade of* 1901 *compared with that of* 1900.

"For a number of years past it has been our practice to analyse the annual Trade and Navigation Returns, so as to show to what extent the recorded movements in values have been due to variations in the volume of the year's trade, and how far to alterations in prices. The details of this analysis for the year 1901 will be found in the numbers of the *Economist* of the 18th and 25th January, 1902, and we now, as usual, bring together the main figures, in order that the broad results may be more clearly indicated :—

I. *Imports.*

	1901.		1900.
	Value in Trade and Navigation Returns.	Value Calculated at Prices of 1900.	Value in Trade and Navigation Returns.
	£	£	£
Living animals	9,400,000	9,594,000	9,622,000
Articles of food and drink	210,545,000	212,399,000	205,320,000
Tobacco	4,819,000	4,616,000	4,799,000
Metals	30,787,000	33,626,000	33,195,000
Chemicals, dye stuffs, and tanning materials	6,130,000	6,378,000	5,561,000
Oils	11,031,000	11,838,000	11,033,000
Raw materials for textile manufactures	79,402,000	85,957,000	77,347,000
Raw materials for sundry industries	57,955,000	60,659,000	65,679,000
Manufactured articles	93,610,000	97,365,000	93,225,000
Miscellaneous "	17,298,000	17,498,000	16,772,000
Parcel post	1,262,000	1,300,000	1,119,000
Total imports	522,239,000	541,248,000	523,075,000
Deduct re-exports	67,847,000	69,445,000	63,182,000
Net imports	454,392,000	471,803,000	459,893,000

II. *Exports of British Products.*

	1901.		1900.
	Value in Trade and Navigation Returns.	Value Calculated at Prices of 1900.	Value in Trade and Navigation Returns.
	£	£	£
Living animals	742,000	772,000	901,000
Articles of food and drink	14,885,000	15,561,000	13,622,000
Raw materials	33,378,000	40,326,000	41,879,000
Yarns of all kinds	14,850,000	15,551,000	15,711,000
Textile fabrics of all kinds	88,622,000	88,052,000	86,502,000
Metals and machinery	57,269,000	63,788,000	64,967,000
Ships, new (not registered as British)	9,160,000	8,234,000	8,588,000
Apparel and articles of personal use	10,940,000	11,003,000	10,394,000
Chemicals and chemical and medicinal preparations	8,942,000	9,224,000	9,263,000
All other articles	38,069,000	39,390,000	36,413,000
Parcel post	3,642,000	3,802,000	2,952,000
Total	280,499,000	295,703,000	291,192,000

"It will be seen from the above tables that the total value of the imports retained for home consumption in 1900 was 459,893,000*l.*, and that if we had paid for our net imports of last year the same average prices as in 1900, they would have cost us 471,803,000*l.* It follows, therefore, that there was last year an increase in the quantity of our net imports equal to the difference between 471,803,000*l.* and 460,534,000*l.*, which is 11,910,000*l.*, equal to 2·56 per cent. Similarly with the exports. In 1900 we exported British products to the value of 291,192,000*l.*, while our exports in 1901, if we had received for them the same prices as in 1900, would have realised 295,703,000*l.* There was thus last year, as compared with 1900, an increase in the quantity of our exports which is measured by the difference between 295,703,000*l.* and 291,192,000*l.*, and amounts to 4,511,000*l.*, or 1·55 per cent. And taking imports and exports together, the volume of our foreign trade last year (exclusive of re-exports) shows, as compared with 1900, an increase of 2 per cent., the computation being:—

	£
Actual value of net imports and of exports of British products in 1900	751,085,000
Value of net imports and of exports of British products in 1901, calculated at the prices of 1900	767,506,000
Increase in 1901, due to larger quantities	15,021,000
	= 2 per cent.

"Next, as to prices. The actual cost of our imports for home consumption last year was 454,392,000*l.*, whereas if we had paid for them the same average prices as in 1900, they would have cost us 471,803,000*l.* Thus, owing to lower prices, there was a reduction in the cost of our imports of 17,411,000*l.*, or 3·69 per cent.; or, in other words, the prices of our imports were on the average 3·69 per cent. lower in 1901 than in 1900. And a similar calculation with regard to our exports shows a more pronounced decline in prices. Our total exports of British products last year are valued at 280,499,000*l.* If, however, we had got for them the same average prices as in 1900, they would have fetched 295,703,000*l.*, so that there was a decrease in aggregate value of 15,204,000*l.*, or 5·14 per cent., of which decrease 6,330,000*l.* was in coal, and 6,519,000*l.* in metals and machinery, most other articles showing comparatively slight changes. In imports and exports combined, the decrease in value, owing to lower prices, amounts to 32,615,000*l.*, or 4·25 per cent., the calculation working out thus:—

	£
Value of net imports and of exports of British products for 1901, calculated at prices of 1900	767,506,000
Actual value in trade and navigation returns.....	734,891,000
Decrease due to lower prices in 1901	32,615,000 = 4·25 per cent.

(B.)—*Railway Traffic Receipts in* 1900 *and* 1901.

"Subjoined is an analysis of the traffic receipts of fourteen of the principal English railways during the past two years:—

First Half-Year.

[00's omitted.]

	Passengers, Parcels, and Mails.		Merchandise.		Minerals.		Live Stock.	
	1901.	1900.	1901.	1900.	1901.	1900.	1901.	1900.
	£	£	£	£	£	£	£	£
London and N. Western	2,739,2	2,704,0	2,244,9	2,225,1	1,360,2	1,469,7	84,4	100,8
Great Western................	2,424,3	2,316,6	1,377,7	1,365,1	1,382,6	1,434,8	67,3	70,2
Midland	1,658,2	1,581,7	2,106,9	2,152,4	1,459,9	1,588,7	44,0	42,8
North Eastern	1,316,1	1,239,9	1,394,2	1,423,6	1,423,0	1,510,0	48,5	51,9
Lancashire & Yorkshire	1,069,7	1,061,0	897,8	917,8	543,3	568,4	17,9	18,1
Great Northern	951,6	948,6	838,1	875,6	457,2	486,5	25,2	24,4
" Eastern	1,337,2	1,270,1	758,0	739,6	259,0	291,6	46,8	45,0
London and S. Western	1,426,4	1,403,3	446,2	437,9	199,6	204,0	17,2	18,2
South Eastern and Chatham	1,427,7	1,413,1	323,8	319,7	184,5	186,3	10,8	9,9
London, Brighton, &c....	1,049,8	1,006,8	210,7	201,0	153,9	164,0	6,0	5,6
Great Central	419,2	382,1	514,4	550,9	468,9	484,9	10,3	11,7
North Staffordshire........	124,7	125,4	131,7	132,9	138,4	144,2	2,4	2,1
Metropolitan	333,0	366,3	36,0	32,6	20,4	23,8	3	3
North London	161,3	166,7	71,1	68,3	23,1	25,9	8	9
Total	16,438,4	14,985,6	11,351,5	11,442,5	8,074,0	8,582,8	381,9	401,9
	+ £452,8		− £91,0		− £508,8		− £20,0	

Second Half-Year.

[00's omitted.]

	Passengers, Parcels, and Mails.		Merchandise.		Minerals.		Live Stock.	
	1901.	1900.	1901.	1900.	1901.	1900.	1901.	1900.
	£	£	£	£	£	£	£	£
London and N. Western	3,315,4	3,289,4	2,351,0	2,265,9	1,431,6	1,445,3	117,9	125,0
Great Western	2,955,1	2,890,9	1,438,4	1,400,9	1,460,1	1,391,4	71,2	74,4
Midland	1,934,4	1,882,2	2,143,6	2,137,5	1,599,2	1,572,6	42,8	47,3
North Eastern	1,691,7	1,645,4	1,468,6	1,471,2	1,447.4	1,547,1	49,1	53,7
Lancashire & Yorkshire	1,244,7	1,238,4	940,3	915,9	554,8	552,3	20,7	20,7
Great Northern	1,136,5	1,152,6	904,9	882,6	498,7	486,6	21,2	23,3
„ Eastern	1,725,7	1,690,2	821,9	785,4	300,5	291,8	33,8	36,3
London and S. Western	1,632,0	1,636,2	471,0	457,7	216,4	217,1	20,6	21,3
South Eastern and Chatham	1,708,5	1,740,8	363,5	370,7	200,0	184,6	12,1	11,0
London, Brighton, &c.	1,265,8	1,250,3	234,1	234,7	174,3	161,0	5,9	5,6
Great Central	486,5	471,6	528,1	520,0	490,2	492,2	9,5	10,3
North Staffordshire	142,4	142,3	133,6	131,2	147,7	143,9	2,2	2,3
Metropolitan	324,0	339,2	39,1	37,3	22,2	23,3	4	5
North London	160,9	164,9	70,9	70,6	27,6	26,3	9	9
Total	19,723,6	19,534,4	11,909,0	11,681,6	8,570,7	8,535,5	408,3	432,6
	+ £189,2		+ £227,4		+ £35,2		− £24,3	

V.—*Fires in London and the Metropolitan Fire Brigade in* 1901.

The following particulars are taken from the Report of the Chief Officer to the Fire Brigade of the London County Council, in continuation of similar notices for former years. It will be noticed, however, that the form of the matter has been considerably changed, and that whilst some particulars formerly embodied in the text of the report have been tabulated, others have been entirely omitted.

"The following table gives the number of fires in 1901, and the average number of fires during the previous ten years.

Number of Fires.

Year.	Serious.	Slight.	Total.
1891-1900	167	3,240	3,407
1901	99	3,585	3,684

"These cases of fire entailed the turning out of brigade men and appliances for work in extinguishing fires, and do not include chimney fires and false alarms.

“*Authorised Strength of the Brigade.*

“*Staff.*

1	chief officer.
1	second "
1	third "
6	superintendents.
7	district officers.
73	station "
147	first class firemen.
133	second "
598	third and fourth class firemen.
36	men under instruction.
17	pilots.
153	coachmen.
1	engineer and 6 officials engaged on hydrant work.
1	mechanical engineer.
9	storekeepers and clerks.
1	working foreman.
34	mechanics and labourers.

“*Material and Duties.*

65	land fire engine stations, with horses.
4	floating or river stations.
17	street and sub-stations, without horses.
3	hose carts stationed in the street.
4	" and ladder trucks stationed in the street.
26	hand fire escapes stationed in the street.
11	hose carts, and hand fire escapes stationed in the street.
1	fire float.
5	steam fire engines on barges.
68	land steam fire engines.
17	six-inch manual fire engines.
4	under six-inch manual fire engines.
7	hose tenders.
8	" and ladder trucks.
104	" carts.
40½	miles of hose.
5	steam tugs.
9	barges,
7	skiffs.
174	hand fire escapes.
2	emergency ladders.
13	long fire ladders.
55	ladder vans.
2	trollies for engines.
7	hose and coal vans.
5	" ladder vans.
6	traps for visiting.
4	stores vans.
1	canteen van.
1	waggon for street duties.
4	bicycles.
62	watch boxes.
260	horses.
115	telephone lines between fire stations.
694	fire alarm call points.
31	telephone lines to police stations.
129	" public and other buildings.
4	bell-ringing fire alarms to public and other buildings.

“*Accidents and Injuries.*

“The number of accidents to members of the brigade recorded during 1901 is 204, 1 of which, I regret to say, was fatal.

“The following are particulars of the accidents necessitating men going on the sick list:—

Nature of Accidents due to Service.	Number of Cases.
Burns and scalds	11
Contusions	31
Incised, lacerated, and punctured wounds	24
Injuries to feet and legs	21
" back, chest, hips, and ribs	11
" hands and arms	28
" head and face	4
" eyes	3
Injuries, internal	6
Partial suffocation	3
Sprains and strains	24
Total due to service	166
Accidents not due to service	38
Total	204

"There have been during the year 420 cases of illness (including 36 due to service).

"117 officers and men were struck off the strength of the brigade during the year."

The following particulars are obtained from the tables appended to the report, viz.: fires classified according to occupations, and arranged in the order of frequency of occurrence; to which are added, for the purpose of comparison, the corresponding figures for the three previous years:—

Number.	Occupations.	Number of Fires in			
		1901.	1900.	1899.	1898.
1	Private houses	1,005	921	1,000	896
2	Lodgings	718	676	769	780
3	Victuallers	71	92	85	70
4	Commons, roads, and open spaces	70	52	84	58
5	Under repair and building	53	42	52	44
6	Unoccupied	50	43	48	46
7	Offices	48	31	51	33
8	Tailors, clothiers, and outfitters	42	44	34	41
9	Confectioners and pastrycooks	41	33	29	48
10	Boot and shoe makers	40	41	43	33
11	Railways	39	36	57	33
12	Builders	38	39	35	51
13	Coffee houses	36	29	27	30
14	Cabinet makers	35	27	33	32
15	Drapers	35	23	41	28
16	Bakers	34	25	28	22
17	Printers and publishers	33	24	38	45
18	Oil and colour men	32	36	42	61
19	Engineers and machinists	32	19	27	20
20	Restaurants and refreshment rooms	29	39	41	39
21	Greengrocers and fruiterers	29	38	30	36
22	Grocers	27	38	32	34
23	Chandlers	27	18	28	31
24	Hotels (including club-houses)	26	27	31	22
25	Furniture makers and dealers	25	25	19	15
26	Tobacconists	25	12	26	25
27	Laundries	23	28	30	24
28	Butchers	22	18	26	26
29	Provision dealers	21	29	29	22
30	Stables	21	23	24	23
31	Electric lighting works	19	9	10	3
32	Booksellers, binders, and stationers	19	10	13	12
33	Waggons on the road	18	21	24	15
34	Ironmongers	18	12	7	8
35	Fried fish shops	17	23	27	18
36	Beershop keepers	17	17	11	9
37	Dairymen	16	6	18	19
38	Fishmongers	15	10	11	12
39	Schools	15	7	14	13
40	Walking and umbrella stick makers	15	2	—	4
41	Watch and clock makers	15	4	7	5
42	Chemists	14	23	20	18
43	Corn dealers	14	12	25	13

Number.	Occupations.	Number of Fires in			
		1901.	1900.	1899.	1898.
44	Hairdressers	14	11	18	25
45	General dealers	14	11	16	17
46	Let out in tenements	14	8	14	14
47	Cycle makers	13	6	9	8
48	Upholsterers	13	8	10	8
49	Carriers	12	18	9	9
50	Coal and coke merchants	12	7	15	9
51	Electrical engineers	12	8	9	4
52	China, glass, and earthenware dealers	12	10	9	12
53	Waste paper merchants	12	7	7	7
54	Churches and chapels	11	12	10	15
55	Contractors	10	17	23	21
56	Milliners and dressmakers	10	12	19	11
57	Leather merchants	10	3	6	8
58	Looking glass and picture frame makers	10	4	10	11
59	Newsagents	10	8	11	9
60	Stationers, wholesale	10	2	8	3
		3,138	2,736	3,339	2,908
	Remainder	546	649	507	677
	Total	3,684	3,385	3,846	3,585

Fires classified under the causes to which they have been assigned, and arranged in the order of frequency of occurrence:—

Causes.	Number of Fires.
1. Unknown	1,195
2. Lamps (not gas) and lights thrown down	602
3. Sparks from fires, &c.	275
4. Defective or improperly set flues, hearths, stoves, &c.	274
5. Gas in various ways	270
6. Candles	203
7. Children playing with fire, matches, &c.	170
8. Hot ashes	102
9. Airing linen and drying stoves	88
10. Mineral oil stoves, explosion, upsetting of	81
11. Overheating of flues, ovens, furnaces, boilers, &c	79
12. Boiling over, or upsetting of fat, oil, pitch, &c.	65
13. Gas stoves, overheat, &c., of	64
14. Foul and blocked flues, &c.	43
15. Electric wires, defective electric circuit	27
16. Vapour of spirit in contact with flame	22
17. Burning rubbish	15
18. Lime slaking	14
19. Clothes, &c., in contact with fire	13

Causes.	Number of Fires—*Cont.*
20. Smoking tobacco	12
21. Lucifer matches	9
22. Lighted taper	8
23. Friction of machinery	7
24. Spirit stoves	6
25. Fumigating	6
26. Boiler, explosion, overheating of	6
27. Fireworks, letting off	6
Miscellaneous, varying from 3 to 1	22
Total	3,684

VI.—*English Literature in* 1901.

THE following particulars are taken from the *Publishers' Circular* of the 4th January, 1902, in continuation of a series of similar extracts for previous years:—

"The books of 1900 showed a fall of nearly 500 in number compared with 1899, and the books of 1901 show a further fall of about a thousand, which number would have been larger but for the great quantity of new fiction issued during the last two months of 1901. In 1900 new novels issued in November and December numbered 313 and 95; in 1901 they numbered 372 and 125 respectively. The total number of new novels published in 1900 was 1,563; in 1901 it was 1,513, only fifty fewer. Poetry shows a fall of more than a hundred. Of new works on voyages and travels the number is precisely the same as in the previous year, but in reprints there is a fall of forty. In 1900 history and biography (including South African events, territories, races, and notabilities) composed one of the few classes which showed an increase; now it shows a decrease of nearly two hundred. An interesting list of books on South Africa and the war issued during 1901 fills nearly two columns in pp. 552 and 553 of the *Publishers' Circular* for 23rd November last.

Analytical Table of Books Published in 1901.

Subjects.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total of Books on each Subject for the Year.	
Theology, sermons, biblical	* 31	42	50	35	32	17	17	27	28	40	77	45	441	
	† 2	12	11	9	2	2	2	10	3	2	12	11	78	519
Educational, classical, and philological	* 44	44	66	46	42	26	30	37	35	41	80	50	541	
	† 6	8	8	6	13	—	5	6	8	1	10	6	77	618
Juvenile works, novels, tales, and other fiction	* 47	71	133	99	107	61	76	99	156	167	372	125	1,513	
	† 19	33	53	44	37	33	26	30	38	28	95	43	479	1,992
Law, jurisprudence, &c.	* 8	8	21	10	3	3	6	4	5	9	18	14	109	
	† 3	—	4	3	2	2	4	5	5	4	4	1	37	146
Political and social economy, trade, and commerce	* 25	19	40	20	31	20	18	22	29	36	55	36	351	
	† 6	11	13	7	9	3	2	15	9	5	19	5	104	455
Arts, science, and illustrated works	* 21	15	25	18	29	19	14	23	14	21	70	41	310	
	† 1	2	2	3	—	2	1	1	3	1	8	4	28	338
Voyages, travels, geographical research	* 7	7	16	19	12	20	3	17	10	8	29	26	174	
	† —	—	6	4	3	—	2	6	2	1	6	—	30	204
History, biography, &c.	* 31	39	52	46	31	27	17	17	28	22	81	47	438	
	† 3	23	11	11	4	5	8	4	4	8	11	1	93	531
Poetry and the drama	* 16	15	24	18	20	7	5	8	14	14	31	30	202	
	† 2	5	2	5	3	1	1	2	3	6	17	13	60	262
Year-books and serials in volumes	45	31	32	17	25	7	15	15	23	18	45	71	344	344
Medicine, surgery, &c.	* 13	26	12	9	17	5	10	17	7	10	26	17	169	
	† 10	11	4	1	4	3	3	2	8	5	15	2	68	237
Belles-Lettres, essays, monographs, &c.	* 24	15	24	18	32	13	11	24	19	25	47	41	293	
	† 2	5	1	3	2	3	1	—	—	—	11	4	32	325
Miscellaneous, including pamphlets, not sermons	* —	—	18	1	1	10	5	3	1	11	15	5	70	
	† —	—	1	—	1	—	1	—	—	—	—	—	3	73
	366	442	629	452	462	289	283	394	452	483	1,154	638		6,044

* New books. † New editions.

"The analytical table is divided into thirteen classes; also new books and new editions.

Divisions.	1900.		1901.	
	New Books.	New Editions.	New Books.	New Editions.
Theology, sermons, biblical, &c.	579	129	441	78
Educational, classical, and philological	613	119	541	77
Novels, tales, and juvenile works	1,563	546	1,513	479
Law, jurisprudence, &c.	101	46	109	37
Political and social economy, trade, &c.	380	107	351	104
Arts, sciences, and illustrated works	385	63	310	28
Voyages, travels, geographical research	174	70	174	30
History, biography, &c.	601	115	438	93
Poetry and the drama	296	74	202	60
Year-books and serials in volumes	410	—	344	—
Medicine, surgery, &c.	192	74	169	68
Belles-Lettres, essays, monographs, &c.	289	41	293	32
Miscellaneous, including pamphlets, not sermons	177	5	70	3
	5,760	1,389	4,955	1,089
	7,149		6,044	

VII.—*Notes on Economical and Statistical Works.*

Britain and the British Seas. By H. J. Mackinder, M.A. 377 + viii pp., 8vo. London: Heinemann and Co.

Geography, as treated in school text books, is not an interesting subject, and does not afford any training for the human faculties, except that of memory. Mr. Mackinder's book, which is one of a series dealing with the regions of the world, is extremely interesting. It includes within its scope meteorology, tidal movements, geology, pre-history, history, economic history, and many other subjects of diverse but great interest. It is in the main a statement of results rather than a reasoned treatise proving or at least giving the evidence for the results. In most cases Mr. Mackinder gives part of the evidence, though perhaps not enough by itself to convince a sceptical mind, and the statistician may regard his book as a fascinating story book, proving perhaps that truth is stranger than fiction, and not as a scientific treatise which proves its theories. To take an instance. What is the cause of the double tide at Southampton? Mr. Mackinder states (p. 39) that it is due to the tide being interfered with by the Isle of Wight; but he does not explain in any detail how the result is actually brought about. The double tide at Southampton has often been discussed, and the precise explanation of that phenomenon has given rise to a certain amount of controversy. It would of course be absurd to discuss a point like this in great detail in such a volume, space would not allow it. We quote the following to show the author's view of the basis of British imperialism

(p. 343): "In such transactions" (that is where British capital is invested abroad) " all that the lender requires is security for the capital and sure payment of the interest. These can be had wherever Government is stable and wherever honesty has been recognised as the wisest policy. Lands blessed with such Government are, however, usually wealthy, and give a return to invested capital at a rate little higher than can be obtained in Britain itself. But since capital goes from the lending to the borrowing country not in the shape of gold, which is comparatively useless in a new and barbaric land, but in the shape of steel rails, locomotives, and machinery, there is always on the part of a manufacturing community a motive for advancing loans. Much British capital has therefore been invested where Government and morality were less favourable, in Egypt, in China, and in other similar regions. When order breaks down, or foreign interference is threatened in a land in which large British interests are at stake, Britain is often compelled to add to her possessions by assuming authority among an alien and distant population."

But in spite of the fact that the economic portions of the subject are perhaps necessarily treated very scantily, there is no doubt that this book gives a picture of the origin and general position of Great Britain and Ireland in a most skilful way. The abundant maps and plans, the wide range of subjects treated, the novelty (to the ignorant reader) of many of the facts, combine to make the volume most attractive. How many Irishmen are there who realise that "the catholic Irishman is essentially a pre-Celt?" How tragic it is to reflect that this aboriginal population are now striving to learn the language of their first conquerors? When we learn further that the Highlander is a pre-Celt, and that the Welshman has a strong pre-Celtic infusion, we feel that the theory of the Celtic fringe has become more difficult by the knowledge that the fringe is pre-Celtic. But how much more interesting the book would be if it had been possible to have given the full evidence which reduces the Celtic League to the status of a poor joke.

British "Gothenburg" Experiments and Public House Trusts. By Joseph Rowntree and Arthur Sherwell. 176 + vi pp., 8vo. London: Hodder and Stoughton, 1901.

No one can doubt that the present movement towards public house trust companies in England is an event of some importance; but it is at present doubtful whether, and if so, to what extent the cause of temperance will be furthered by them. Messrs. Rowntree and Sherwell's new book is chiefly concerned with the earlier experiments of this nature in England, and it cannot be said that the results of the inquiry are altogether reassuring. The main results seem to confirm the authors' earlier opinion as to the conditions of success of such a movement. It has always been evident to students of the subject, that Lord Grey's proposals, while they had the advantage of eliminating private gain from the retail trade in alcohol, yet had the disadvantage that they might create a more powerful and sinister collection of vested interests than those of the trade. The People's Refreshment House Association, Limited, have now been in existence several years, and from Messrs. Rowntree and Sherwell's book we can, in some cases, judge of the result. By looking at the appropriation of surplus profit, we see that in the year 1901 24 per cent. went to schools. A grant to a board school is a grant to the ratepayers, a grant to a church school is a grant to the Church. Norwegian experience has shown us the danger of applying the profits in relief of rates, the ties of interest which bind the Church and the trade are already by some persons regarded as a scandal. The regulations of some of the different public house trust companies do not appear to have been drawn by persons who appreciated the dangers to be guarded against. Any appropriation of profits which is directly or indirectly in relief of rates, or which benefit the locality where the profits are made, is liable to create an interest favourable to a large consumption of alcohol in that locality. Lord Grey's friends in many cases go further, and aim at making the public house attractive. Messrs. Rowntree and Sherwell are emphatic in their view that in order to diminish the consumption of alcohol, counter attractions, and not attractions, are wanted.

In some respects this book is not up to the level of the authors' more celebrated book. Statistics should have been given, if possible, of the sales at all the houses belonging to the People's Refreshment Association, Limited, in order to assist the reader to judge of the effects of the "Gothenburg" management. This might, for instance, throw light on "the curious fact that considerably less mineral waters are sold under the new management than under the old" (p. 35). It is possible that the falling off was in the consumption of whisky and soda, or other beverages of that class. No doubt in future editions the authors will be able to give more elaborate details, and to improve one or two rather obscure statements, but it is to be hoped that everyone who is assisting in promoting a public house trust company will read this book. If trust companies are started on right lines, much good may be done, but if on wrong lines, it is not impossible that they will do evil rather than good.

Poverty: a Study of Town Life. By B. Seebohm Rowntree. 437 + x pp., 8vo. London: Macmillan and Co., Limited, 1901.

Although Mr. Rowntree's inquiry into the conditions of life in the city of York is an economic and statistical work of the highest value and importance, it is not necessary in this *Journal* to give it more than a short notice, because our readers will already have seen various criticisms of it in newspapers and magazines. The most serious criticisms made upon his method are those which deny the possibility of measuring the amount of food necessary for economic efficiency in calorics. This question is, however, one for doctors and physiologists; the basis of Mr. Rowntree's calculations may be wrong, it may be that by careful mastication a man can maintain his efficiency on a singularly small amount of food, but Mr. Rowntree has clearly done his best in the present state of our knowledge, and those criticisms which object *in toto* to his methods of determining the minimum cost of food for a family, while they do not suggest any better method, are rather ill-judged. The chief statistical weakness of the book is a tendency to give averages of a class of figures when the figures for many members of the class are zero. Thus, in class "B," he gives as the average sum contributed by lodgers to be 7¼*d.* a week. This figure is that for all the families, whether they keep lodgers or not, and for many purposes it is of more importance to know the average sum contributed by lodgers in families where lodgers are kept. It might have been well to have found out the profit obtained by keeping lodgers if that could have been done. A similar criticism applies to the figure of 8¼*d.* as the average contribution of male supplementary earners, and of 9*d.* for female earners, and also to the figure of 1*s.* 3*d.* for average earnings contributed by female heads of households in class "D." Another rather questionable proceeding is to include lodgers in the definition of family (see p. 80). Are lodgers included in the figures (from the Census) given on p. 82? Objection might also be taken to Mr. Rowntree's classification of families by needs as well as incomes, for he puts a large family into a lower earning class than a moderate family with the same actual income. This is liable to produce an incorrect impression when the family are mostly grown up and yet live together; No. 31, on p. 69, for instance, consists of a field labourer, his wife, and four sons, aged from 18 to 30, none of whom are total abstainers. Criticisms such as these will, no doubt, occur to every reader, and almost any system of classification or any method of averaging is open to some objection. Perhaps in a future edition some alterations will be made, but as it stands the book is a remarkable piece of work, and one which is likely to be of permanent value.

Manual of Electrical Undertakings, 1901-02. Compiled under the direction of Emile Garcke. 976 + xl pp., 8vo. London: Publishing Offices, Mowbray House.

The sixth annual volume of the Manual of Electrical Undertakings, with its facts, figures, and maps, cannot fail to be interesting to anyone who likes to be aware of modern industrial developments. The following figures, giving the percentage of profit on capital expended and the prices obtained for electric current by municipalities and companies respectively, are of general interest:—

	Profit.		Price.	
	Municipalities.	Companies.	Municipalities.	Companies.
	d.	*d.*	*d.*	*d.*
1896	4·92	5·49	5·32	6·08
'97	5·61	6·33	5·18	5·77
'98–99	5·73	6·54	4·68	5·62
'99–1900	5·55	5·51	4·35	5·51
1900–01	4·90	5·45	4·06	5·26
'01–02	4·30	5·00	3·82	4·94

The maps are of great interest. That of London, showing the "Tube" railways constructed, under construction, authorised, and suspended, is most bewildering, and shows how desirable it is that some general scheme should be adopted to supply London and its suburbs with electrical railways. The other maps, showing the supply of electrical energy over large areas, also make one realise that there may be advantages in not confining the operations of electric companies within the limit of municipalities or rural districts:

Municipal Administration. By John A. Fairlie, M.D. 468 + xiii pp., 8vo. New York: The Macmillan Company, 1901.

It would not be easy to find a duller subject than municipal administration, and we must therefore when we read a book about it, be careful not to attribute the dulness of the book to the lack of skill of the author. Professor Fairlie's book is a careful and elaborate compilation of facts neatly sorted and arranged. Some of them are curious and interesting. Thus we find that the percentage of adulterated samples found in Birmingham in 1897 is enormously greater than that for any other large city in England. It would be interesting to know the cause of this. Again, we find that (to quote the author's own words) "in the smaller cities the size of the" (police) "force is not only less absolutely, but—and this is significant—is in every country less in proportion to population than in the largest cities. Cities of about 50,000 inhabitants frequently have not more than five or six policemen to each 10,000 of population; in cities of about 10,000 the number of policemen usually averages at least 10 per 10,000; when the population is as large as 500,000, there are generally somewhere near 15 policemen per 10,000; while of the largest cities, New York has 20, London 24, Berlin 25, and Paris over 30 policemen to each 10,000 inhabitants." This generalisation is undoubtedly one of great importance, but perhaps is not unexpected by those who have studied municipal statistics. But in the main the facts contained in this book taken by themselves are of little interest, and they are not combined into any whole by any speculative theory. Consequently they do not afford much assistance to the student of politics, except as a possible mine of material.

The book, which deservedly claims to be a comphrensive and systematic treatise, is divided into four parts, under the headings, "Municipal History," "Municipal Authorities," "Municipal "Finances," and "Municipal Organisation." The history is treated in broad outline. Municipal authorities are considered under the heads of Public Health and Safety, Charities and Provident Institutions, Education and Improvements. The last term is rather vague, and is made to cover streets, bridges, sewers, scavenging, baths, parks, waterworks, public lighting, urban transportation, docks, markets, cemeteries, and municipal crematoria. The author's conclusions on the last of these subjects are interesting at the present time. They are: 1. When a public company has shown itself well managed and active in the public interest, it seems doubtful policy to run the risk of a less able management under municipal control; but agreements even with such a company should be carefully drawn to safeguard the interests of the city. 2. In the case of franchises granted without proper provisions, the first step to be taken is to compel the reduction of rates on an improvement in facilities, so that the company will receive only a fair income from its property. If this is not done, little will be gained by a municipal purchase of the plant at the swollen values due to the high rates charged. 3. After such reduction in rates, or upon the expiration of a franchise in a city which has managed other public works with success, and is not already involved in as many undertakings as it can manage, municipal ownership of monopolies is advisable."

In municipal expenditure and municipal indebtedness (both measured *per capita*) England and Wales lead the way, but without an investigation into the services rendered by the municipality and the property which it owns, these facts are of little value. The last part of the book, after dealing with the Council, administrative officials, and the mayor, gives the programme of the National Municipal League, but the details of this are not of much interest for English readers.

Der Deutsche Kapitalmarkt. By Rudolph Eberstadt. vi + 280 pp., 8vo. Leipzig: Duncker and Humblot, 1901.

In the recent industrial development of the German Empire, business enterprise has been hindered by the scarcity of capital; such at any rate is the impression of competent observers. The present depression in Germany is to all appearance a very serious one. The present moment is therefore not inopportune for a study of the facts and conditions of the capital involved in German undertakings, and *Der deutsche Kapitalmarkt* contains a large number of valuable statistical tables designed to assist the student in such an inquiry.

The first part of the book deals with the amounts of new capital issued during the past five or six years in the various branches of industry and commerce, with the banking capital, building and mortgage companies, and the local, municipal, and State indebtedness.

The second part deals with the amount of loans secured on immovable property. Without a knowledge of the German Company law and the German laws relating to mortgages and real property, it is almost impossible to judge or criticise Herr Eberstadt's work, but it bears all the traces of a careful and sound investigation into the actual conditions of German investment. He has a great admiration for English banking methods, and gives an interesting though short account of English banks, holding the view that the English cheque system is a necessary result of the banking system, and he is opposed to the project of *Postscheckverkehrs.* His views on the mortgaging of immovable property are also very instructive, for he wants a complete division of mortgages into mortgages incurred for the purposes of improvement (*Meliorationshypotheken*) and mortgages on sites (*Bodenschulden*), but for an Englishman it is very difficult to appreciate the precise effect of Herr Eberstadt's criticisms and suggestions. What is more to the purpose is that this book contains many statistical tables of great use and interest, which throw a great deal of light on the industrial condition of Germany so far as that is shown by the capital invested in various forms of enterprise. The following table, giving the capital issues in the year 1899 in millions of marks, may be of interest:—

Nominal Values.

	Shares.	Debentures.*	Conversions.
1. Industrial	494	126	32
2. Banking	209	55	4
3. Real property	328	393	—
4. State and local loans	—	630	—
5. Foreign	162	216	—
	751	1,419	36

* Stock or bonds paying a fixed rate of interest.

If we look at the actual amount of capital subscribed, the totals become 894, 1,408, 136 respectively, and their market value was 123, 1,364, and 63. It would be worth while to compare these figures with the figures derived from present market values, and also with the corresponding figures for England. It is to be hoped that someone will be found to undertake the task.

Die Frauenfrage. By Lily Braun. 557 + vi pp., 8vo. Leipzig: S. Kirzel, 1901.

This book deals with two topics. The first is the position of women from the earliest times down to the nineteenth century; the second, the industrial position of women in the nineteenth century. But in each case the inquiry is limited to European, North American, or Australian women of white colour. A second volume is promised which will state the civil position and also the psychological and ethical sides of the woman question. The historical section is interesting, but either too long or too short. If it is to be considered as a mere introduction, it was unnecessary to devote so much as a hundred pages to it; on the other hand, such a topic as the position of women in Greece—a topic of the greatest interest, and one which still requires investigation—is treated with great brevity, and no attempt is made to trace the connection between the Greek view of love and the social position of Greek women. But it cannot be denied that this section of the book bears witness to great pains and research on the part of the authoress, and contains a considerable quantity of interesting information which cannot easily be obtained in a collected form elsewhere.

The second part of the book has one main defect: there is not sufficient distinction made between the industrial position of women caused by their being women, and the industrial position of women which is due to the same causes as the industrial position of many men. The authoress does not lose sight of this fact altogether, but there are sections of this book which would as well form part of a book on the position of the labouring classes, as a book on the woman question. No doubt the German social democrats consider that the position of women is intimately bound up with the general position of the proletariate, and with some reason, but surely the true question to be discussed under the heading *Frauenfrage* is the peculiar difference which sex creates, and the problem is to determine how far men and women are suited to perform similar work, and how far the disabilities of the one sex are based upon rational grounds. Thus, to take an important illustration, how far provision should be made in women's employment for certain interruptions. This subject can be much better discussed by women than by men. Frau Braun states blankly that if conditions of employment are decent, women can, without harm, carry on their work continuously. The whole matter should have been carefully investigated, and not treated in the very perfunctory way thatFrau Braun treats it. Undoubtedly there are many persons who take the contrary view to Frau Braun's, and the matter should have been treated in such a way that the reader had proper scientific material on which to form his own opinion. So long as such a question remains unsettled, errors must be made.

The same want of scientific treatment characterises much of the book; statistics and sentimental outbursts are heaped up together. Mrs. Stetson and Miss Collet are quoted with an even impartiality. An indexless mass of facts and opinions forms a very crude food for the digestion of the ordinary reader; but for all this, undoubtedly *Die Frauenfrage* is a useful book, in spite of the fact that its utility might have been increased threefold had it been very much shorter, and had the material been handled with more scientific skill.

Principles of Political Economy. By J. Shield Nicholson, M.A., D.Sc. Vol. iii, Books iv and v. 460 + xi pp., 8vo. London: A. and C. Black, 1901.

This is the concluding volume of Professor Nicholson's treatise on political economy. It is hardly necessary to state that it is written in that easy and charming style which characterises the other writings of the author. The subjects of the two books which are contained in this volume are economic progress and the economic functions of government. The former, by reason of its dealing largely with quantities, is the more interesting to the statistician; the latter, by reason of the great importance and rarity of the topics dealt with, will, in all probability, be the book of the whole section which the ordinary reader will find most interesting.

Economic progress is discussed and measured in different ways, or rather, the different elements of economic progress are treated separately. Thus we have chapters on Progress and Money, Progress and General Prices, Progress and Relative Prices, Rent and Progress, Progress and Profits, and Progress and Wages.

These chapters are very skilfully compared. A large mass of facts and economic history is presented in a way which makes them delightful, and not difficult reading.

The discussion of the economic functions of Government begins with a chapter on Economic Ideals; the benefits, and failures, and defects of Individualism are next treated. This leads to the consideration of the methods and limitations of governmental interferences, and then to the study of the Expenses and Revenues of Government. Two criticisms on small points of detail may here be offered. The first, is that it would be better not to use the term "ground rent;" it is an auctioneer's term, and ground rents (even at the time when they are created) do not bear any relation to the economic rent of the land. In developing land, it is found that more profit can be made by splitting up the annual value into two parts, just as in promoting a company preference as well as ordinary shares are issued. The matter is of some importance, because much misunderstanding has been caused by the confusion between the ground rent of the economists and the ground rent of the market. The other point is the use of the term succession duties to cover death duties. There is a substantial difference between estate duty, which is levied on and at a rate depending on the property passing on the death, and succession and legacy duties, which are levied on the amount to which a person succeeds, and at a rate depending on his relationship to the predecessor or testator. A large part of Book v, is of course taken up with the principle, of taxation, but the author has wisely found space for a chapter on Colonies and Dependencies. The reader cannot help regretting that this chapter was not larger. A correct solution of many of the questions of the present day cannot be hoped for without a careful study of the relations of our colonies to the mother country. Professor Nicholson's views are weighty; when he says that "one after another the possible advantages of empire seem to have been abandoned, or to have fallen short of realisation," he is measuring his words. This chapter is so interesting and valuable as it stands that one wants more. The completion of Professor Nicholson's great work will no doubt give him more leisure; should he devote that leisure to a detailed work on Colonies and Dependencies, he will add to the debt which the public already owes him.

Our Treatment of the Poor. By W. Chance, M.A. 233 pp., 8vo. London: P. S. King and Son.

Sir William Chance's book appeared in 1899, so that this notice is somewhat belated. He states in the introduction that "The close of the present century" (that is the nineteenth century) "is being marked by an outbreak of sentimentality in matters connected with the relief of the poor which threatens to get the upper hand of sense," and the contents are designed to meet this sentimentality with hard facts and arguments. The book is undoubtedly effective, but the author's methods are perhaps more adapted for the popular reader than to the scientific statistician. Sir William uses the method of comparing special instances of unions with different policies instead of making a complete statistical study of the results of all unions. For the average reader Sir William's method is much more interesting, and, probably, much more convincing than the more scientific procedure. The success which has crowned the policy adopted by the Atcham Union of administering out-door relief very strictly is very notable. A very striking instance of the effect of out-door relief on earnings is given us with reference to Bradfield, where the virtual abolition of out-door relief raised the wages of charwomen throughout the union by 6*d*. a day. Bradfield seems to have an exceptionally good board of guardians, if we can judge from their reply to the circular on Old Age Pensions sent by the Parliamentary Committee on the subject, which is published as an appendix. The most interesting part of the book is that which defends the oft attacked poor law schools. The modern fashion of boarding out is no doubt admirably suited for a certain class of persons, but it can hardly supersede all other methods; it is, then, most important that the good and bad sides of poor law schools should be carefully discussed. Sir W. Chance's criticism of old age pension schemes were very useful when the book came out, and may again prove useful at the present moment when the question of old age pensions is again to the fore in Parliament.

Statistical and Economical Articles in Recent Periodicals.

UNITED KINGDOM—

Economic Journal, December, 1901—The Theory of Progressive Taxation: *G. Cassel.* Equity and Economy in Taxation: *E. Cannan.* The economic effects of the Tramways Act of 1870: *V. Knox.* The Dutch Dwelling Houses Act: *N. G. Pierson.* Economics and Commercial Education: *L. L. Price.* Germany's commercial progress: *W. H. Dawson.* The Moujik: *E. A. Cazalet.* Disputed points in the Theory of International Trade: *F. Y. Edgeworth.* The Census of Canada: *J. Davidson.*

The Economic Review, January, 1902—Co-operation in Italy: *H. W. Wolff.* Thirty years' Export Trade: British and Irish Produce, 1870-99: *B. Ellinger.* Some Aspects of Profit-sharing: *G. Mathieson.* The Postulates of the Monetary Standard: *W. W. Carlile.* The Functions of a University in a Commercial Centre: *Rev. H. Rashdall.*

Biometrika: Vol. i—

Part 1, *October*, 1901—The Scope of Biometrika. The Spirit of Biometrika. Biometry: *F. Galton.* Variationsstatistische Probleme und Materialien: *F. Ludwig.* Data for the Problem of Evolution in Man. Anthropometric Data from Australia: *A. O. Powys.* Inheritance of the Duration of Life and the Intensity of Natural Selection in Man: *Miss M. Beeton and Prof. K. Pearson.* Variation in *Aurelia aurita: E. T. Browne.* A First Study of Natural Selection in *Clausilia laminata: W. F. Weldon.*

UNITED KINGDOM—*Contd.*

Biometrika: Vol. i—Contd.

Part 2, *January*, 1902—Variation and Inheritance in the Parthenogenetic Generations of the Aphis *Hyalopterus trirhodus*: *E. Warren.* Tables for Testing the Goodness of Fit of Theory to Observation: *W. P. Elderton.* On Criminal Anthropometry and the Identification of Criminals: *W. R. Macdonell.* Variability, Symmetry, and Fertility in an abnormal Species: *C. B. Davenport.* On the Change in Expectation of Life in Man during a period of *circa* 2,000 years: *K. Pearson.*

Journal of the Royal Agricultural Society. Vol. lxii, 1901—English Agriculture in the Reign of Queen Victoria: *R. E. Prothero.* The Relationship between Human and Bovine Tuberculosis: *J. McFadyean.* The Hop and its English Varieties: *J. Percival.*

Journal of the Institute of Bankers—

December, 1901—Emergency Issues of Notes and Tokens consequent upon the Passing of the Bank Restriction Act of 1797: *M. Phillips.*

January, 1902—Bankers' Lien, and Rights in Respect of Advances on Bills of Lading, &c.: *A. R. Butterworth* (*continued in February and March*). The work of the London Clearing House in 1901.

February, 1902—Clearing House returns of the United States of America.

March, 1902—The Short Loan Fund of the London Money Market: *J. H. Tritton.*

UNITED STATES—

American Statistical Association, Publications. December, 1901—Permanent Census Office. Notes on Foreign Censuses: *C. E. A. Winslow.* Notes on Vital Statistics of American Cities: *C. E. A. Winslow.* Statistics of Diseases: *C. E. A. Winslow.* Cost of Home-Cooked and Purchased Food: *Ava M. Stoddard.*

Annals of the American Academy of Political and Social Science. January, 1902—The Isthmian Canal and its Economic Aspects: *E. R. Johnson*, The Isthmian Canal question as affected by Treaties and Concessions: *S. Pasco.* Present status and future prospects of American Shipbuilding: *J. F. Crowell.* Government Ownership of Railroads: *M. A. Knapp.* The Concentration of Railway control: *H. T. Newcomb.*

Journal of Political Economy. December—Index Numbers and the Standard of Value, I: *T. S. Adams.* Iron and Steel in England and America: *J. Schoenhof.* Value in its relation to Interest: *R. S. Padan.* Credit Currency and Population: *D. Kinley.* Iron-ore mining and Minnesota: *J. Moersch.* Wages and Interest as determined by Marginal Productivity: *J. B. Clark.* A history of the Latin Union: *A. de Foville.* Our next Money Controversy: *F. L. McVey.*

UNITED STATES—*Contd.*

Political Science Quarterly. December—The Finances of Porto-Rico: *J. H. Hollander.* The economic interpretation of History, I: *E. R. A. Seligman.* Four German Jurists, IV: *M. Smith.* Taxation in the Philippines, I: *C. C. Plehn.* Richmond Mayo-Smith.

Quarterly Journal of Economics. February, 1902—The Fecundity of the native and foreign-born population in Massachusetts II: *R. R. Kuczynski.* Excise Taxation in Porto Rico: *J. H. Hollander.* Capitalization of the United States Steel Corporation: *E. S. Meade.* A positive Theory of Economics: *F. B. Hawley.* The rise and supremacy of the Standard Oil Company: *G. H. Montague.* Trade cycles and the effort to anticipate: *G. C. Selden.*

Yale Review. February, 1902—Constitutional interpretation: *J. T. Bascom.* Some economic aspects of legal tender: *J. L. Laughlin.* Colonial policy of the Germans: *A. G. Keller.* Physical vigor of Public employees: *J. R. Commons.* Restriction of Municipal Earnings: *A. D. Adams.* Movement of the Negro Population. The Immigrant Population.

Monthly Summary of Commerce and Finance—

July, 1901—Porto Rico, Hawaii, Philippines, Guam, Samoan Islands, and Cuba. Prices of leading articles.

August, 1901—American Commerce.

September, 1901—Reciprocity Treaties and Agreements. Territorial expansion of the United States.

October, 1901—Colonial Administration.

November, 1901—Commercial Australia in 1900. Reciprocity Treaties and Agreements.

December, 1901—Great Canals of the World. Commercial Japan in 1900.

AUSTRIA—

Statistische Monatschrift. November—December, 1901—Die viii Session des Internationalen statistischen Institutes in Budapest, 1901: *F. v. Juraschek.* Studentenstiftungen des Jahres 1899: *C. Max.* Die Zwangsversteigerungen von Liegenschaften im Jahre 1899: *J. Winkler.* Oesterreichs Sparcassen im Jahre 1899 (Fortsetzung) iii. Ertrag und Vermögensstand: *H. Ehrenberger.* Der Zwischenverkehr der im Reichsrathe vertretenen Königreiche und Länder mit den Ländern der ungarischen Krone im Jahre 1900: *R. Krickl.* Die häuslichen Nutzthiere in Oesterreich nach dem Stande vom 31 Dec., 1900: *F. v. Meinzingen.*

FRANCE—

Annales des Sciences Politiques. January, 1902—Les États-Unis et l'impérialisme: *E. Boutmy.* Les entreprises belges et l'étranger. I: *P. de Laveleye.* L'armée russe. I: *M. B.* Les aliénés criminels: *P. Matter.* Anvers autrefois et aujourd'hui. Le présent: *F. Maury.* Chronique des questions agricoles (1901): *D. Zolla.*

FRANCE—*Contd.*

Journal des Économistes—

December, 1901—La participation au bénéfice: *H. L. Follin.* La question des sucres et la conférence de Bruxelles. Mouvement scientifique et industriel: *D. Bellet.* Travaux des Chambres de Commerce: *M. Rouxel.* Lettre des États-Unis: *G. Nestler-Tricoche.* Le développement de l'industrie sucrière aux États-Unis: *D. B.*

January, 1902—Le xx^e^ siècle: *G. de Molinari.* Le marché financier en 1901: *A. Raffalovich.* Les États-Unis et la réciprocité commerciale: *A. Viallate.* Les finances de la France: *M. Zablet.* La colonisation en Tunisie: *Un Colon.*

February, 1902—La responsabilité publique: *L. Domanski.* La crise viticole: *M. La Clavière.* Le mouvement agricole: *L. Gandeau.* Le grand programme des travaux maritimes de la Belgique: *D. Bellet.*

March, 1902—La production et le commerce du travail: *G. de Molinari.* Mouvement scientifique et industriel: *D. Bellet.* Travaux des Chambres de Commerce: *M. Rouxel.* Les vrais motifs de l'assurance obligatoire en Allemagne: *A. de Malarce.*

Journal de la Société de Statistique de Paris—

December, 1901—La Démographie d'une petite ville au xix^{e} siècle: *P. Meuriot.* L'Incidence des droits de douane: *P. des Essars.* Chronique des questions ouvrières et des assurances sur la vie: *M. Bellom.*

January, 1902—Mouvement de la population de la France en 1900. La loi qui règle les naissances: *G. Cauderlier.* Chronique des transports: *M. Hertel.*

February, 1902—La loi qui règle les naissances: *G. Cauderlier.*

Revue d'Economie Politique, 1902—

January—Le concept de l'éthique et de l'économie politique dans l'historie: *L. Brentano.* La co-opération rurale en Belgique: *E. Vandervelde* (*concluded in February*). Les transformations du contrat de salaire et leur influence sur la rétribution de l'ouvrier: *C. Rist.*

February—Des méthodes proposées pour régulariser la valeur de la monnaie: *A. Loria.* La protection légale des travailleurs est-elle nécessaire: *R. Jay.* L'Elevage en Australie: *L. Vigouroux.*

La Réforme Sociale—

No. 24, 1901—La femme et la réforme sociale. L'enseignement supérieur des jeunes filles: *Amédée de Margerie.*

No. 1, 1902—Des limites à apporter aux pouvoirs du mari dans l'administration de le communauté: *A. Boistel.* Sur les origines du socialisme: *A. des Cilleuls.*

No. 2—L'alcoolisme et les classes dirigeantes: *L. Jacquet.* Le travail des femmes mariées dans la grande industrie allemande, d'après une enquête récente: *E. Dubois.*

No. 3—Comment sont gérées nos finances, d'après un rapport de la cour des comptes: *H. Valleroux.* L'Enseignement supérieur des jeunes filles à l'étranger: *R. P. Berthier.* La Corporation sous le Consulat, l'Empire, et la Restauration: *E. Levasseur.*

FRANCE—*Contd.*

La Réforme Sociale—Contd.

No. 4—L'enseignement ménager en Belgique: *Mme. A. Godefroy.*

No. 5—Un organisme de de la vie moderne dans la petite industrie. Les sociétés économiques: *V. Brants.* Les revendications des mineurs jaunes: *D. Haillot.* Comment un ouvrier s'élève: *G. Deviolaine.*

GERMANY—

Jahrbuch für Gesetzgebung, Verwaltung, und Volkswirtschaft. Heft 1, 1902—Deutsche Schiffahrtsinteressen im Stillen Ozean: *H. Schumacher.* Die öffentliche Kinderfürsorge der Stadt Berlin: *A. A. Tenney.* Die Strafgewalt moderner Vereine: *A. Leist.* Die Schätzung von Grundstücken für die Beleihung: *I. Lützeler.* Die Erhebungen der Gewerbe-Aufsichtsbeamten über die Fabrikarbeit verheirateter Frauen: *L. Pohle.* Aus venetianischen Handlungsbüchern. Ein Beitrag zur Geschichte des Grosshandels im 15 Jahrhundert: *H. Sieveking.* Über die Notwendigkeit der Reform der Verwaltungsorganisation in Preussen. Vorschläge zu ihrer Durchführung nebst Grundzügen zu einem Gesetzentwurf: *A. Lotz.* Der Unterstützungsverein für alle in der Hut- und Filzwarenindustrie beschäftigten Arbeiter und Arbeiterinnen: *W. Frisch.* Dierheinisch-westfälische Eisenindustrie in der gegenwärtigen Krisis: *L. von Wiese.* Hans von Scheel und die Reichstatistik: *F. Zahn.* Richard Böckh und das Statistische Jahrbuch der Stadt Berlin, 1876-1900: *C. Ballod.* John Ruskin: *C. Eckert.* Neuere Litteratur zum Bürgerlichen Gesetzbuch: *P. Oertmann.*

Jahrbücher für Nationalökonomie und Statistik. January, 1902—Das Institut des Aufsichtsrats, seine Stellung und Bedeutung im deutschen Aktienrecht und der deutschen Volkswirtschaft, die Notwendigkeit und Möglichkeit seiner Reform: *E. Loeb.* Wohnungsnot und Grundrente: *P. Möller.* Die wirtschaftliche Bedeutung der deutschen Privatversicherungsgesetzgebung: *A. Manes.* Die Getränkesteuern in Frankreich: *M. v. Heckel.* Die soziale Statistik des Auslands auf der Pariser Weltausstellung, 1900: *F. Zahn.*

Zeitschrift für Socialwissenschaft—

1901, *Heft* 12—Staat und Wirtschaft im alten Ægypten: *R. Thurnwald.* Die Notwendigkeit einer Reichsfinanzreform: *Frh. von Zedlitz-Neukirch.* Dühring und Henry George: *F. Oppenheimer.* Russland und Frankreich in Mittel- und Ostasien: *M. von Brandt.*

1902, *Heft* 1—Der Ursprung der Exogamie: *W. I. Thomas.* Ziele und Wege der Reichsfinanzreform: *Frh. von Zedlitz-Neukirch.* Das australische "Arbeiterparadies:" *F. Oppenheimer.* Die uneheliche Fruchtbarkeit in Deutschland: *F. Prinzing.*

GERMANY—*Contd.*

Zeitschrift für Socialwissenschaft—Contd.

1902, *Heft* 2—Ueber Vermehrungstendenz bei den Naturvölkern und ihre Gegenwirkungen: *R. Lasch.* Zur griechischen Wirtschaftsgeschichte: *J. Beloch.* Handelsstatistische Reformgedanken: *K. Mareiner.* Eine Berliner Dienstbotenenquête: *E. Hirschberg.*

Vierteljahrshefte zur Statistik des Deutschen Reichs, 1901, *Heft* 4—Konkurs-Statistik, 1900. Zur deutschen Justizstatistik, 1900. Die Bergwerke, Salinen und Hütten, 1900. Salz—Gewinnung und -Besteuerung, 1900. Bierbrauerie und Bierbesteuerung, 1900. Zur Kriminalstatistik.—Verbrechen und Vergehen gegen Reichsgesetze, 1895—1900. Zur Statistik der deutschen Lebensversicherungs—Gesellschaften, 1900. Die Bevölkerung auf den deutschen Schiffen im Auslande am 1 Dezember, 1900. Bevölkerung, Fläche, Wohnhäuser im Deutschen Reich nach der Volkszählung vom 1 Dezember, 1900.

ITALY—

La Riforma Sociale—

December, 1901—Contro la Malaria: *C. Einaudi.* Malaria e Pellagra: *A. Cabiati.* La Città di Napoli. Le soluzioni empiriche delle difficoltà presenti: *F. S. Nitti.* Per il rinnovamento di Napoli: *C. Senise.* Sulla legalità dell' inchiesta di Napoli: *C. Ranelletti.*

January—Questioni controverse nella teoria della traslazione delle imposte in Regime di Monopolio: *P. Jannoccone.* Il Mare nella vita Economica: *E. Barone.* Vincenzo Gioberti e il Secolo Ventesimo *G. Carle.*

February—Disegno di Legge sulla nomina dei Professori Straordinari: *G. Carle.* Rivista Economico Finanziaria dell' Italia nel Periodo 1885-1901: *Spectator.* Due Anni di Agitazioni Proletarie: *A. Schiavi.*

Giornale degli Economisti—

December—Disegno di una Riforma Razionale del Sistema Tributario Italiano: *G. Alessio.*—Il Problema delle Case Economiche: *G. Spera.* Cenno Necrologico su Carlo Conigliani: *La Direzione.* Sul Preteso Decremento del Patrimonio Nazionale Italiano: *C. Conigliani.*

January—L'Ultima Fase dell' Industria Laniera: *E. Sella.* L'Ottava Sessione dell' Istituto Internazionale di Statistica: *R. Benini.* I Mezzadri e la Cassa Nazionale di Previdenza: *F. Coletti.* Municipalizzazione dei pubblici servigi: *G. Montemartini* (*continued in February*).

February— I Fondamenti dell' Economia Pura: *P. Boninsegni.* La Conversione del Debito Pubblico in Ungheria: *G. Crivellari.* Indice Generale Alfabetico for Nomi d'Autori della Seconda Serie dal 1° Luglio, 1890, al 31 Dicembre, 1900.

SWITZERLAND—

Journal de Statistique Suisse, Lief 1, 1902—L'assistance publique en 1900 dans le canton de Fribourg: *C. Fontaine.* Über eine volkswirtschaftliche Enquête in Sachen der Kranken und Unfallversicherung: *J. Beck.* L'assurance obligatoire du bétail dans le canton de Fribourg: *Dr. Buomberger.* Rapport historique et statistique sur les prisons et pénitenciers de Fribourg: *T. Corboud.* Statistique sur les inoculations préventives du charbon symptomatique dans le canton de Fribourg: *M. Collaud.* Die Sterblichkeit in der Schweiz während der Jahre 1871-90: *A. Corecco.*

VIII.—*Quarterly List of Additions to the Library.*

Additions to the Library during the Quarter ended 15*th March*, 1902, *arranged alphabetically under the following heads:*—(a) *Foreign Countries;* (b) *India and Colonial Possessions;* (c) *United Kingdom and its Divisions;* (d) *Authors, &c.;* (e) *Societies, &c.* (*British*); (f) *Periodicals, &c.* (*British*).

The Society has received, during the past quarter, the current numbers—either quarterly, monthly, or weekly—of the periodical official publications dealing with the following subjects:—

Consular Reports—From United States and United Kingdom.

Labour Reports, &c.—From Austria-Hungary, Belgium, France, United States, New York State, New Zealand, and United Kingdom.

Trade Returns—From Argentina, Austria-Hungary, Belgium, Bulgaria, China, Egypt, France, Germany, Greece, Italy, Mexico, Netherlands, Russia, Spain, Sweden, Switzerland, United States, India, Canada, and United Kingdom.

Vital Statistics—From Argentina, Egypt, Germany, Italy, Netherlands, Roumania, Switzerland, United States (Connecticut and Michigan only), Queensland, South Australia, and United Kingdom.

Vital Statistics of following Towns—Buenos Ayres, Brünn, Prague, Brussels, Copenhagen, Berlin, Hanover, Florence, Bucharest, Madrid, London, Manchester, Dublin, Edinburgh, and Aberdeen.

The Society has received during the past quarter the current numbers of the following unofficial Periodicals and Publications of Societies, &c., arranged under the Countries in which they are issued:—

Denmark—Nationalökonomisk Tidsskrift.

France—Annales des Sciences Politiques. Économiste Français. Journal des Économistes. Monde Économique. Polybiblion, Parties Littéraire et Technique. Réforme Sociale. Le Rentier. Revue d'Économie Politique. Revue de Statistique. Journal de la Société de Statistique de Paris.

Germany—Allgemeines Statistisches Archiv. Archiv für Soziale Gesetzgebung und Statistik. Deutsche Oekonomist. Jahrbuch für Gesetzgebung, Verwaltung, und Volkswirtschaft. Jahrbücher für Nationalökonomie und Statistik. Zeitschrift für die gesamte Staatswissenschaft. Zeitschrift für Socialwissenschaft. Mittheilungen aus der Handelskammer Frankfurt a. M.

Italy—L'Economista. Giornale degli Economisti. Rivista Italiana di Sociologia. Riforma Sociale.

Sweden—Ekonomisk Tidskrift.

Switzerland—Journal de Statistique suisse,

United States—Banker's Magazine. Bradstreet's. Commercial and Financial Chronicle, with supplements. Engineering and Mining Journal. Journal of Political Economy. Political Science Quarterly. Quarterly Journal of Economics. Yale Review. American Academy of Political and Social Science, Annals. American Economic Association, Economic Studies and Publications. American Geographical Society, Bulletin. American Statistical Association, Quarterly Publications. American Philosophical Society, Proceedings and Transactions. Columbia University, Studies in History, &c.

India—Indian Engineering. Asiatic Society of Bengal, Journal and Proceedings.

Canada—The Chronicle: Insurance and Finance.

New Zealand—Government Insurance Recorder. Trade Review and Price Current.

United Kingdom—The Accountant. Accountants' Magazine. Appointments Gazette. Athenæum. Australian Trading World. Bankers' Magazine. Bimetallist. British Refrigeration. British Trade Journal. Broomhall's Corn Trade News. Browne's Export List. Citizen. Colliery Guardian. Commercial World. Cotton. Economic Journal. Economic Review. Economist. Fireman. Incorporated Accountants' Journal. Insurance Record. Investors' Monthly Manual. Investors' Review. Iron and Coal Trades' Review. Labour Co-partnership. Licensing World. Machinery Market. Nature. Navy League, Journal. Policy-Holder. Post Magazine. Public Health. Publishers' Circular. Sanitary Record. Shipping World. Statist. The Times. Tuberculosis. West Africa. Anthropological Institute, Journal. Cobden Club, Leaflets. East India Association, Journal. Howard Association, Leaflets, &c. Imperial Institute, Journal. Institute of Actuaries, Journal. Institute of Bankers, Journal. Institution of Civil Engineers, Minutes of Proceedings. Iron and Steel Institute, Journal. Lloyd's Register of British and Foreign Shipping, Statistical Tables. London Chamber of Commerce, Journal. London University Gazette. Manchester Literary and Philosophical Society, Memoirs and Proceedings. Royal Agricultural Society, Journal. Royal Asiatic Society, Journal. Royal Colonial Institute, Proceedings and Journal. Royal Geographical Society, Geographical Journal. Royal Irish Academy, Proceedings and Transactions. Royal Meteorological Society, Meteorological Record and Quarterly Journal. Royal Society, Proceedings. Royal United Service Institution, Journal. Sanitary Institute, Journal. Society of Arts, Journal. Statistical and Social Inquiry Society of Ireland, Journal. Surveyors' Institution, Professional Notes and Transactions. Trade Circulars.

Donations.	By whom Presented (when not purchased).
(a) Foreign Countries.	
Argentine Republic—	
Anuario de la Direccion General de Estadistica correspondiente al año 1900. Tomo i, 8vo....................	The Director-General of Statistics
Boletin demografico argentino. Año II. No. 7, Octobre. Fol. 1901	The Ministry of the Interior

Donations—Contd.

Donations.	By whom Presented (when not purchased).
(a) **Foreign Countries**—*Contd.*	
Austria-Hungary—	
Ackerbau-Ministeriums. Statistisches Jahrbuch des k.k. (Current numbers)	The Ministry of Agriculture
Arbeitseinstellungen und Aussperrungen in Osterreich während 1900. Diagrams, 8vo.	The Ministry of Commerce
Arbeitsstatistisches Amt.—	
Mittheilungen des k.k., im Handelsministerium. Heft 2. 8vo. 1902	The Austrian Labour Department
Protokoll den 9^{en} Sitzung des Arbeitsbeirathes. 6 Juli, 1901. 8vo.	
Eisenbahn-Statistik—	
Anlagecapital der in . . . dem öffentlichen Verkehre dienenden Locomotiv-Eisenbahnen sowie die diesen Unternehmungen gewährten Staatlichen und sonstigen Begünstigungen nach dem Stande, 31 December, 1896. La. fol.	The I. & R. Ministry of Railways
Hauptergebnisse der Osterreichischen Eisenbahn-Statistik im Jahre 1894-97. 4 vols., la. 8vo.	
Längenverhältnisse und Bauliche Anlagen der in . . . dem öffentlichen Verkehre dienenden Locomotiv-Eisenbahnen nach dem Stande vom 31 December, 1896. La. fol.	
Statistik der . . . im Betriebe gestandenen Locomotiv-Eisenbahnen. Bände 1—3, 1898-1900. 3 vols., la. fol.	
Statistik der im Betriebe gestandenen elektrischen Eisenbahnen, Drahtseilbahnen und Tramways mit Pferdebetrieb für 1898 und 1899. 1 vol., 8vo.	
Österreichisches Wirtschaftspolitisches Archiv. (vormals "Austria"). (Current numbers.) 8vo. 1901	The Ministry of Commerce
Post- und Telegraphenwesens im Jahre 1900. Statistik des österr. 8vo.	
Rechtspflege. Ergebnisse des Concursverfahrens im Jahre 1897. Fol.	The I. & R. Central Statistical Commission
Rechtspflege. Statistische Nachweisungen über das Civilgerichtliche Depositenwesen . . . . im Jahre 1897. Fol.	
Statistische Monatschrift. (Current numbers)	
Statistische Nachrichten aus dem Gesammtgebiete der Landwirtschaft. (Current numbers)	
Verkehrs. Statistik des, für 1898 und 1899. Abth. 1, Landstrassen, Wasserstrassen, Flussschifffahrt	
Tabellen zur Währungs-Statistik. Verfasst im k.k. Finanz-Ministerium. Zweite Ausgabe. 2^{er} Theil, 2 Heft. 12^{er} Abschnitt: "Effectencurse" (Tabellen 181—223). Diagrams, fol. 1901	The Ministry of Finance
Hungary—	
Auswärtiger Handel der Länder der Ungarischen Krone im Jahre 1900. Fol.	The Central Statistical Bureau
Eisenbahnen der Länder der Ungarischen Krone in den Jahren 1897-99. 1 vol., fol.	
Krankenkassen der Länder der Ungarischen Krone im Jahre 1898. Fol.	
Ungarisches Statistisches Jahrbuch. Neue Folge, viii. 1900. 8vo.	

Donations—Contd.

Donations.	By whom Presented (when not purchased).
(a) **Foreign Countries**—*Contd.*	
Belgium—	
Armée Belge. Statistique médicale. Année 1900. 8vo.	The Belgian Government
Bulletin du Service de Santé et de l'Hygiène publique. Nov. et Dec., 1901. 8vo.	The Belgian Legation
Mines. Annales des. Tome vii. Livr. 1. Année 1902	The Belgian Labour Department
Travail. Rapports annuels de l'Inspection du Travail. 6ᵉ année (1900). 8vo.	
Hasselt. Exposé de l'administration et de la situation des Affaires Communales en 1899-1900. 8vo.	The Burgomaster
Brazil—	
Importação e Exportação . . . de Janeiro a Julho de 1901. 27 pp., fol.	The Statistical Bureau
Chile—	
Sinopsis Estadistica y Jeografica de la Republica en 1900. Plates, &c., 8vo.	The Central Statistical Bureau
Summary of the Finances of Chile from the Independence to 1900. Published in Spanish and English, by the Accountant-General's Department, 1901. Obl. 4to., maps and diagrams	Mr. Agustin Ross
Denmark—	
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Alcune osservazioni di natura economica circa l' aumento dei Pazzi ricoverati in Italia. 15 pp., 8vo. 1899	
Sul Valore sociale dei Pazzi. 24 pp., 8vo. 1899	
Le Condizioni dei Manicomi e degli Alienati in Italia (1896-99). Appunti statistici e considerazioni. 23 pp., 8vo. 1900	
Per la Biometria dei Medici. 12 pp., 8vo. 1901	
La Necrotocia in Italia. 9 pp., 8vo. 1901	
Foville (***Alfred de***). Études économiques et statistiques sur la propriété foncière. Le Morcellement. 283 pp., 8vo. Paris, 1885	„
Garcke (***Emile***). Manual of Electrical Undertakings . . . 1901-02. Vol. vi, 8vo. 1901	The Compiler
Gunton (***George***)—	
Principles of Social Economics inductively considered and practically applied, with criticisms on current theories. 2nd edit. xxiii + 464 pp., 8vo. New York, 1897	Purchased
Wealth and Progress: A Critical Examination of the Wages Question. 7th edit. xxiii + 385 pp., 8vo. New York, 1897	„
Guyot (***Yves***). Les Indigènes de l'Afrique du Sud. Les Vaalpens. 16 pp., 8vo. Paris, 1901	The Author
Leroy-Beaulieu (***Paul***). Traité de la Science des Finances. 6ᵉ édition. Tomes 1, Des revenus publics. 2, Le Budget et le Crédit public. 2 vols., 8vo. Paris, 1899	Purchased
Maltbie (***Milo Roy***). English Local Government of to-day. A Study of the relations of Central and Local Government. 287 pp., 8vo. New York, 1897	The Columbia University Library
Mayr (***Georg von***)—	
Begriff und Gliederung der Staatswissenschaften . . . 66 pp., 8vo. Tübingen, 1901	The Author
Selbstmordstatistik. 24 pp., 8vo. Jena, 1901	

Donations—Contd.

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(d) **Authors, &c.**—*Contd.*	
Newcomb (*H. T.*). Mechanical Tabulation of the Statistics of Agriculture in the 12th Census of the United States. 33 pp., plates, 8vo. Phila, 1901	Mr. H. Hollerith
Nicholson (*J. Shield*). Principles of Political Economy. Vol. iii. Books 4 and 5. 8vo. 1901	The Author
Porter (*Hon. Robert P.*). Municipal Trading in England and the United States. An Address . . . 35 pp., 8vo. London, 1901	"
" Practical." How to bring about an early improvement in Trade. [Anon.] 8 pp., 8vo. Bristol, 1895	"
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Scott (*W. R.*). The King's and Queen's Corporation for the Linen Manufacture in Ireland. 8 pp., 8vo. 1901	The Author
Seyd (*Richard*). Statistics of Failures in the United Kingdom during 1901. Fol.	The Compiler
Shaw (*James J.*). Municipal Trading. An Address delivered to the Statistical and Social Inquiry Society of Ireland. 16 pp., 8vo. Dublin, 1901	The Author
Shee (*George F.*). The Briton's First Duty. The case for Conscription . . . 148 pp., 8vo. Diagrams. 1901	The Army League
Sidgwick (*Henry*). The Principles of Political Economy. 3rd Edition. xxiv + 592 pp., 8vo. 1901	Purchased
Swarte (*Victor de*). De Lille aux Portes de Fer. 39 pp., 8vo. Lille, 1902	The Author
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Welton (*Thomas A.*). The Water Difficulty: A suggested Solution. 16 pp., 8vo. 1901	The Author

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(e) **Societies, &c. (British).**	
Iron and Steel Institute. Journal. Vol. lx. Plates, 8vo. 1902	—
Liverpool Literary and Philosophical Society. Proceedings during the 90th Session, 1900-01. No. 55. 8vo. 1901	The Society
Manchester Statistical Society. Public House Licences: *Sir W. H. Houldsworth.* An International Gold Coinage: *C. H. Swan.* The Metric, Decimal, and Imperial Systems of Weights and Measures . . . : *H. E. Wollmer*	"
Peabody Donation Fund. 37th Annual Report of the Governors, for 1901. 4to	The Secretary
Royal Agricultural Society. Journal. Vol. lxii. Plates, 8vo. 1901	The Society
Royal Institution. Proceedings. Vol. xvi. Part 2. No. 94. Plates, 8vo.; also List of Members, &c. 1901	The Institute

Donations—Contd.

Donations.	By whom Presented (when not purchased).
Annual Trade Circulars—	
Helmuth Schwartze and Co. Annual Wool Report for 1901. Fol.	The Firms
Maclean and Henderson. Review of the Insurance Share Market in 1901. Fol. (Stirling)	
Pixley and Abell. Annual Trade Circular for 1901	
Weddel (W. and Co.). Annual Review of the Frozen Meat Trade in 1901; with Chart	
William Tattersall's Cotton Trade Circular for 1901	
Woodhouse (Messrs. C. M. and C.). Annual Trade Circulars for 1901, relating to Cocoa and Cinchona Bark and Quinine. 2 parts, 4to	
(f) Periodicals, &c. (British).	
Biometrika: a Journal for the Statistical study of Biological Problems. Vol. i, Part 2. January, 1902. Diagrams	Purchased
Brewers' Almanack and Wine and Spirit Trade Annual for 1902. 8vo.	Mr. P. C. Morgan
Licensed Victuallers Official Annual (9th year of issue) for 1902. 8vo.	Mr. Albert B. Deane
Mitchell's Newspaper Press Directory. 57th Annual issue, 1902. La. 8vo. 1902	The Publishers

Periodicals, &c., Purchased.

Almanach de Gotha, 1902.
Banking Almanac, 1902.
British Almanac, 1902.
County Councils . . . Companion, 1902.
Financial Reform Almanack, 1902.
Hazell's Annual for 1902.
Howe's Classified Directory to Metropolitan Charities, 1902.
Stock Exchange Year Book for 1902.
Whitaker's Almanack, 1902.
Willing's Press Guide, 1902.

IX.—PERIODICAL RETURNS.

REGISTRATION OF THE UNITED KINGDOM.

No. I.—ENGLAND AND WALES.

MARRIAGES—To 30th September, 1901.

BIRTHS and DEATHS—To 31st December, 1901.

A.—*Serial Table of* Marriages, Births, *and* Deaths, *returned in the Years* 1901-1895, *and in the* Quarters *of those Years.*

Calendar Years, 1901-1895:—*Numbers.*

Years	1901.	'00.	1899.	'98.	'97.	'96.	'95.
Marriages No.	—	257,245	262,334	255,879	249,145	242,764	228,204
Births........ ,,	929,270	926,304	928,646	923,165	921,693	915,331	922,291
Deaths .... ,,	551,316	587,459	581,799	552,141	541,487	526,727	568,997

Quarters *of each Calendar Year,* 1901-1895.

(I.) Marriages:—*Numbers.*

Qrs. ended last day of	1901.	'00.	1899.	'98.	'97.	'96.	'95.
March........ No.	43,793	43,868	44,512	45,143	44,708	43,266	39,627
June .... ,,	72,038	71,408	72,389	70,108	68,844	65,938	60,665
September ,,	72,137	69,744	72,016	66,497	65,927	65,057	61,048
December ,,	—	72,225	73,417	73,631	69,666	68,503	66,864

(II.) Births:—*Numbers.*

Qrs. ended last day of	1901.	'00.	1899.	'98.	'97.	'96.	'95.
March........ No.	231,904	239,988	231,147	231,680	235,282	222,672	239,615
June .... ,,	233,518	234,659	239,409	232,449	226,348	231,002	233,276
September ,,	234,932	232,592	231,829	235,088	234,452	228,558	232,410
December ,,	228,916	219,065	226,261	223,948	225,611	233,099	216,990

(III.) Deaths:—*Numbers.*

Qrs. ended last day of	1901.	'00.	1899.	'98.	'97.	'96.	'95.
March........ No.	146,606	181,318	147,356	150,705	143,323	136,718	170,102
June .... ,,	128,590	141,587	131,749	127,149	126,318	124,939	130,399
September ,,	139,283	133,090	153,719	141,712	139,079	126,550	133,847
December ,,	136,837	131,469	148,975	132,575	132,767	138,525	134,649

Annual Rates of MARRIAGES, BIRTHS, *and* DEATHS, *per* 1,000 PERSONS LIVING *in the Years* 1901-1895, *and in the* QUARTERS *of those Years.*

Calendar YEARS, 1901-1895:—*General Ratios.*

YEARS	1901.	Mean '91-1900.	1900.	1899.	'98.	'97.	'96.	'95.
Estmtd. Popln. of England and Wales *in thousands* in middle of each Year	32,617,	—	32,261,	31,908,	31,555,	31,202,	30,849,	30,497,
Persons Married	—	15·6	15·9	16·4	16·2	16·0	15·7	15·0
Births	28·5	29·9	28·7	29·1	29·3	29·5	29·6	30·2
Deaths	16·9	18·2	18·2	18·2	17·5	17·4	17·0	18·7

QUARTERS *of each Calendar Year,* 1901-1895.

(I.) PERSONS MARRIED:—*Ratio per* 1,000.

Qrs. ended last day of	1901.	Mean '91-1900.	1900.	1899.	'98.	'97.	'96.	'95.
March	10·9	11·7	11·0	11·3	11·6	11·6	11·3	10·5
June	17·7	16·6	17·8	18·2	17·8	17·7	17·1	16·0
September	17·5	16·4	17·2	17·9	16·7	16·8	16·7	15·9
December	—	17·6	17·8	18·3	18·5	17·7	17·6	17·4

(II.) BIRTHS:—*Ratio per* 1,000.

Qrs. ended last day of	1901.	Mean '91-1900.	1900.	1899.	'98.	'97.	'96.	'95.
March	28·8	30·5	30·2	29·4	29·8	30·6	29·0	31·9
June	28·7	30·4	29·2	30·1	29·5	29·1	30·0	30·7
September	28·6	29·7	28·6	28·8	29·6	29·8	29·4	30·2
December	27·8	28·8	26·9	28·1	28·2	28·7	30·0	28·2

(III.) DEATHS:—*Ratio per* 1,000.

Qrs. ended last day of	1901.	Mean '91-1900.	1900.	1899.	'98.	'97.	'96.	'95.
March	18·2	20·6	22·8	18·7	19·4	18·6	17·8	22·6
June	15·8	17·5	17·6	16·6	16·2	16·2	16·2	17·2
September	16·9	16·9	16·4	19·1	17·8	17·7	16·3	17·4
December	16·6	17·7	16·2	18·5	16·7	16·9	17·8	17·5

B.—*Special Town Table:*—POPULATION; BIRTH-RATE *and* DEATH-RATE *in each Quarter of* 1901, *in* THIRTY-THREE *Large Towns.*

Cities and Boroughs.	Estimated Population in the Middle of the Year 1901.	Annual Rate to 1,000 Living during the Thirteen Weeks ending							
		30th March, 1901. (1st Quarter.)		29th June, 1901. (2nd Quarter.)		28th Sept., 1901. (3rd Quarter.)		28th Dec., 1901. (4th Quarter.)	
		Births.	Deaths.	Births.	Deaths.	Births.	Deaths.	Births.	Deaths.
Thirty-three towns	11,463,026	29·6	19·2	29·5	16·9	29·2	19·2	28·8	18·6
London*	4,543,757	29·5	18·7	28·8	16·0	28·9	17·1	28·0	18·3
West Ham	268,868	29·8	13·7	33·4	14·4	35·8	21·8	35·1	18·5
Croydon	134,665	26·9	13·6	27·1	10·6	27·0	14·0	24·7	13·2
Brighton	123,668	23·5	17·6	24·5	13·8	23·6	17·5	24·7	17·0
Portsmouth	189,907	26·8	17·3	27·1	15·7	28·2	21·1	27·9	16·1
Plymouth	107,974	28·9	25·0	26·5	15·5	27·0	15·2	26·0	16·9
Bristol	329,831	27·5	19·6	27·5	15·3	27·2	12·8	25·8	16·2
Cardiff	165,308	26·4	15·9	31·9	14·2	32·4	13·4	29·6	15·9
Swansea	94,618	27·3	19·6	31·0	19·6	29·5	16·2	28·9	16·5
Wolverhampton	94,467	34·6	17·9	32·2	17·2	32·4	16·9	29·3	16·3
Birmingham	523,284	32·6	20·9	32·2	19·0	32·2	21·4	31·2	20·7
Norwich	111,997	29·4	21·2	27·5	15·1	27·9	17·5	27·8	20·2
Leicester	212,498	27·6	15·4	30·9	14·5	28·1	17·1	28·0	15·6
Nottingham	240,400	29·0	19·4	28·3	18·0	28·9	19·2	26·8	17·0
Derby	106,076	26·9	16·0	29·3	15·0	27·1	15·6	27·0	13·7
Birkenhead	111,203	27·5	18·5	29·9	15·4	27·5	23·0	29·3	16·6
Liverpool	686,332	36·2	26·0	32·1	20·6	31·2	23·9	31·7	20·6
Bolton	168,748	27·5	17·2	28·2	18·6	27·8	19·9	26·9	17·4
Manchester	544,934	30·6	22·3	29·1	20·1	26·0	23·4	30·1	22·2
Salford	221,526	31·2	22·2	28·0	18·8	25·8	23·5	31·7	22·0
Oldham	137,382	22·6	16·8	23·9	18·2	22·6	19·5	26·4	21·8
Burnley	97,295	22·5	15·2	27·4	17·2	28·8	21·0	25·4	19·0
Blackburn	127,714	24·7	17·8	28·5	18·1	26·5	19·9	24·3	20·6
Preston	113,117	30·0	19·5	32·2	19·7	30·1	22·5	27·6	20·9
Huddersfield	94,998	21·2	16·4	23·3	16·0	22·6	17·1	22·5	15·5
Halifax	105,113	23·4	18·6	22·9	17·3	22·9	14·4	20·3	14·9
Bradford	280,161	21·9	16·2	24·0	17·3	23·5	17·0	22·0	15·9
Leeds	430,489	28·7	19·2	30·9	16·8	30·0	22·0	30·0	18·7
Sheffield	382,129	35·6	20·3	32·1	17·5	32·4	23·8	33·1	20·6
Hull	241,622	33·7	19·9	33·1	16·4	34·0	20·8	32·1	17·2
Sunderland	146,937	35·6	21·3	35·3	19·6	34·7	25·4	35·4	18·8
Gateshead	110,492	35·0	20·1	36·8	19·6	37·6	27·7	37·3	18·6
Newcastle	215,516	29·3	19·6	32·4	19·1	33·1	25·5	30·4	21·3

* Including deaths of Londoners in the Metropolitan workhouses, hospitals, and lunatic asylums situated outside the County of London, but excluding deaths of persons not belonging to London occurring in the Willesden Workhouse at Hackney, in the London Fever Hospital, in the Metropolitan Asylums Board Hospitals, and in the Middlesex County Lunatic Asylum, within the County of London. The deaths in the provincial towns have been similarly corrected.

C.—*Divisional Table:*—Marriages *in the Year ending 30th September; and* Births *and* Deaths *in the Year ending 31st December*, 1901, *as Registered Quarterly.*

1 DIVISIONS. (England and Wales.)	2 Area in Statute Acres.	3 Enumerated Population, 1901. (Unrevised.)	4 Marriages in Quarters ending 31st December, 1900.	5 31st March, 1901.	6 30th June, 1901.	7 30th September, 1901.
		No.	No.	No.	No.	No.
Engld. & Wales....*Totals*	37,326,962	32,526,075	72,225	43,793	72,038	72,137
I. London	74,839	4,536,063	10,991	6,488	10,766	11,832
II. South-Eastern	3,994,374	3,312,163	6,878	3,839	6,553	6,548
III. South Midland........	3,247,169	2,181,103	4,317	2,149	4,144	4,437
IV. Eastern	3,126,517	1,891,922	4,295	2,105	3,444	3,680
V. South-Western	5,023,292	1,913,082	3,884	2,401	3,845	3,639
VI. West Midland	4,051,193	3,679,264	8,512	4,760	8,215	8,091
VII. North Midland........	3,495,711	2,042,151	4,768	2,609	5,159	4,459
VIII. North-Western........	1,944,713	5,233,586	10,646	7,768	12,197	12,575
IX. Yorkshire	3,721,091	3,596,395	8,263	5,057	8,321	7,959
X. Northern	3,536,522	2,128,633	4,759	3,560	5,110	4,671
XI. Monmthsh. & Wales	5,111,541	2,011,711	4,912	3,057	4,284	4,246

8 DIVISIONS. (England and Wales.)	9 Births in each Quarter of 1901 ending 31st March.	10 30th June.	11 30th September.	12 31st December.	13 Deaths in each Quarter of 1901 ending 31st March.	14 30th June.	15 30th September.	16 31st December.
	No.	No.	No.	No.	No.	No.	No.	No.
Engld. & Wales....*Totals*	231,904	233,518	234,932	228,916	146,606	128,590	139,283	136,837
I. London	34,077	32,656	32,753	31,712	21,120	17,625	18,946	20,149
II. South-Eastern	20,183	20,206	20,768	20,382	13,130	11,083	11,834	11,982
III. South Midland........	14,592	14,389	14,871	14,208	8,413	6,962	7,398	7,409
IV. Eastern	13,598	13,317	13,824	13,577	8,000	6,697	7,474	7,406
V. South-Western	11,261	11,569	11,748	11,183	8,779	7,252	6,121	7,128
VI. West Midland	27,116	28,044	27,524	27,132	17,162	15,148	14,706	15,444
VII. North Midland.......	14,845	15,356	15,368	14,606	8,597	7,702	8,302	7,980
VIII. North-Western........	37,267	36,974	36,241	37,487	25,105	23,207	26,476	24,795
IX. Yorkshire	25,816	26,486	26,973	25,926	15,990	14,638	17,247	15,850
X. Northern	17,451	18,259	18,573	17,653	9,897	9,060	12,066	9,832
XI. Monmthsh. & Wales	15,698	16,262	16,289	15,050	10,413	9,216	8,713	8,862

D.—*General Meteorological Table,*

[Abstracted from the particulars supplied to the

1901.	Temperature of										Elastic Force of Vapour.		Weight of Vapour in a Cubic Foot of Air.	
	Air.			Evaporation.		Dew Point.		Air—Daily Range.		Water of the Thames				
Months.	Mean.	Diff. from Average of 130 Years.	Diff. from Average of 60 Years.	Mean.	Diff. from Average of 60 Years.	Mean.	Diff. from Average of 60 Years.	Mean.	Diff. from Average of 60 Years.		Mean.	Diff. from Average of 60 Years.	Mean.	Diff. from Average of 60 Years.
	°	°	°	°	°	°	°	°	°		In.	In.	Grs.	Gr.
Jan.......	38·7	+1·9	+0·3	37·1	+0·3	35·0	+0·2	9·7	+0·3	...	·204	– ·010	2·4	0·0
Feb.......	35·7	–3·1	–3·7	33·7	–3·9	30·3	–4·8	8·9	–2·2	...	·169	– ·037	2·0	–0·4
Mar. ...	39·0	–2·1	–2·6	36·7	–2·4	33·6	–2·2	11·2	–3·6	...	·193	– ·020	2·3	–0·2
Means...	37·8	–1·1	–2·0	35·8	–2·0	33·0	–2·3	9·9	–1·8	...	·189	– ·022	2·2	–0·2
April ...	48·2	+2·0	+1·2	43·6	–0·2	38·7	–1·5	18·7	+0·4	...	·235	– ·015	2·7	–0·2
May......	53·2	+0·6	+0·5	48·6	–0·2	43·8	–1·0	20·1	–0·3	...	·286	– ·010	3·2	–0·2
June ...	58·8	+0·4	–0·3	52·8	–1·9	47·4	–3·3	20·0	–1·0	...	·328	– ·043	3·7	–0·3
Means...	53·4	+1·0	+0·5	48·3	–0·8	43·3	–1·9	19·6	–0·3	...	·283	– ·023	3·2	–0·2
July......	64·8	+3·0	+2·5	59·5	+1·9	55·2	+2·6	22·2	+1·3	...	·436	+ ·032	4·8	+0·1
Aug. ...	62·3	+1·3	+0·8	57·0	–0·4	52·3	–1·7	20·8	+1·0	...	·393	– ·023	4·3	–0·4
Sept. ...	57·9	+1·3	+0·6	54·2	–0·2	50·9	–0·1	17·2	–1·1	...	·373	– ·004	4·2	–0·1
Means...	61·7	+1·9	+1·3	'56·9	+0·4	52·8	+0·3	20·1	+0 4	...	·401	– ·002	4·4	–0·1
Oct.......	50·5	+1·0	+0·8	48·2	+0·5	45·7	+0·2	15·0	+0·6	...	·307	+ ·001	3·5	–0·3
Nov. ...	41·3	–1·3	–2·4	39·0	–2·8	36·2	–3·6	10·7	–0·5	...	·214	– ·034	2·5	–0·4
Dec. ...	39·9	+0·8	+0·1	38·2	–0·2	36·1	–0·3	9·4	0·0	...	·213	– ·004	2·5	–0·1
Means...	43·9	+0·2	–0·5	41·8	–0·8	39·3	–1·2	11·7	0·0	...	·245	– ·012	2·8	–0·3

Note.—In reading this table it will be borne in mind that the sign (–) minus signifies

(Compiled from observations

for the Year ended 31*st December*, 1901.

Registrar-General by James Glaisher, F.R.S., &c.]

Degree of Humidity.		Reading of Barometer.		Weight of a Cubic Foot of Air.		Rain.		Daily Horizontal Movement of the Air.	Reading of Thermometer on Grass.					1901. Months.
									Number of Nights it was			Lowest Reading at Night.	Highest Reading at Night.	
Mean.	Diff. from Average of 60 Years.	Mean.	Diff. from Average of 60 Years.	Mean.	Diff. from Average of 60 Years.	Amnt.	Diff. from Average of 86 Years.		At or below 30°.	Between 30° and 40°.	Above 40°.			
		In.	In.	Grs.	Grs.	In.	In.	Miles.				°	°	
89	+ 2	29·860	+ ·089	555	+ 1	0·76	−1·08	308	17	12	2	17·6	44·5	January
83	− 1	29·881	+ ·078	559	+ 6	0·86	−0·70	259	22	6	0	14·0	36·3	Feb.
83	+ 2	29·592	− ·156	550	0	2·17	+0·63	339	15	16	0	19·0	36·6	March
85	+ 1	29·778	+ ·004	555	+ 2	Sum 3·79	Sum −1·15	Mean 319	Sum 54	Sum 34	Sum 2	Lowest 14·0	Highst 44·5	Means
69	−10	29·676	− ·074	541	− 2	1·81	+0·13	330	18	10	2	20·8	44·3	April
70	− 7	29·911	+ ·121	540	0	1·79	−0·20	273	10	18	3	25·3	52·0	May
67	− 7	29·879	+ ·065	533	+ 1	1·49	−0·45	274	1	15	14	27·8	53·5	June
69	− 8	29·822	+ ·037	538	0	Sum 5·09	Sum −0·52	Mean 292	Sum 29	Sum 43	Sum 19	Lowest 20·8	Highst 53·5	Means
71	− 4	29·825	+ ·029	525	− 3	1·72	−0·80	175	0	2	29	32·8	55·0	July
70	− 6	29·872	+ ·089	529	− 1	2·03	−0·31	252	0	7	24	36·4	53·8	August
78	− 2	29·745	− ·064	531	− 2	1·35	−0·96	222	1	11	18	28·5	50·1	Sept.
73	− 4	29·814	+ ·018	528	− 2	Sum 5·10	Sum −2·07	Mean 216	Sum 1	Sum 20	Sum 71	Lowest 28·5	Highst 55·0	Means
84	− 4	29·745	+ ·028	539	− 1	2·60	−0·16	247	12	11	8	25·0	52·0	October
83	− 7	29·990	+ ·238	555	+ 7	0·67	−1·67	290	17	7	6	12·2	43·8	Nov.
87	− 2	29·476	− ·294	547	− 5	3·03	+1·05	344	20	9	2	16·6	47·3	Dec.
85	− 4	29·737	− ·009	547	0	Sum 6·30	Sum −0·78	Mean 294	Sum 49	Sum 27	Sum 16	Lowest 12·2	Highst 52·0	Means

below the average, and that the sign (+) plus signifies above the average.

made at Greenwich.)

E.—*Comparative Table of* CONSOLS, PROVISIONS, COAL, *and* PAUPERISM *in each* QUARTER *of* 1899-1900-01.

Quarters ending	Average Prices of										PAUPERISM.	
	2¾*l.* per Cent. CONSOLS (for Money) per 100*l.* Stock.*	DISCOUNT Minimum charged by the Bank of England.*	WHEAT per Quarter in England and Wales.†	MEAT per Pound at the Metropolitan Meat Market (by the Carcase).‡						COAL (Seaborne) in the London Market per Ton.§	Quarterly Average of the Number of Paupers Relieved on the *Last Day* of each Week.	
				Beef.			Mutton.					
				Inferior Quality.	Second Quality.	First Quality.	Inferior Quality.	Second Quality.	First Quality.		In-door.	Out-door.
	£ *s.* *d.*	£	*s.* *d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*s.* *d.*		
1899												
Mar. 31	110 17 10	3·28	26 3	3¾	5⅞	6¾	5⅛	7⅜	8½	17 –	214,955	505,147
June 30	109 12 1	3·00	25 1	3⅞	5⅞	6¾	5	7⅝	8⅝	17 –‖	198,929	490,879
Sept. 30	105 14 2	3·43	25 2	3½	5⅞	6⅞	4⅞	7⅜	8½	17 –‖	191,416	481,004
Dec. 31	102 11 8	5·30	26 4	3⅞	5⅞	7⅛	5	7½	8½	20 3	204,657	479,690
1900												
Mar. 31	100 15 9	4·34	25 11	4⅜	6⅛	7⅛	5⅛	7⅝	8¾	23 9	212,435	491,954
June 30	101 2 5	3·70	25 9	4⅝	6⅛	7⅛	5⅛	8⅜	9½	21 4	194,933	476,260
Sept. 30	98 9 1	3·80	28 7	4¾	6⅜	7⅜	4⅞	8	9	23 –	189,280	469,622
Dec. 31	98 4 6	4·00	27 4	4⅜	6¼	7¼	4¾	7⅝	8¾	23 1	203,698	474,826
1901												
Mar. 31	96 15 3	4·47	26 3	3½	5⅞	6⅞	5	7¾	9	21 5	215,957	492,189
June 30	94 4 11	3·76	27 1	3½	5⅞	6¾	4⅞	7½	8⅜	18 11	200,924	483,010
Sept. 30	93 11 7	3·00	26 11	3½	6	6⅞	4⅞	7⅛	8⅜	17 5	196,848	477,564
Dec. 31	92 10 10	3·67	26 7	3⅝	6	7⅛	4¾	7¼	8⅜	19 5	212,667	482,243

* Furnished by the Chief Cashier of the Bank of England.
† As published by the Board of Agriculture.
‡ Furnished by the Board of Agriculture.
§ The prices of coal are furnished by the Mineral Statistics Department of the Home Office.
‖ Sunderland coal only.

F.—*Special Average Death-Rate Table:*—ANNUAL RATE *of* MORTALITY *per* 1,000 *in* TOWN *and* COUNTRY DISTRICTS *of* ENGLAND *in each Quarter of the Years* 1901-1899.

	Area in Statute Acres.	Population Estimated in the middle of 1901.	Quarters ending	Annual Rate of Mortality per 1,000 in each Quarter of the Years			
				1901.	Mean '91-1900.	1900.	1899.
TOWN DISTRICTS. The 100 Towns, together with all Registration Sub-Districts three-fourths of the population of which, as enumerated in 1891, resided within the boundaries of Urban Sanitary Districts	4,223,075	22,426,288	March ..	18·7	21·0	23·0	19·5
			June	16·2	18·1	18·1	17·0
			Sept.	18·2	18·2	17·7	20·8
			Dec.	17·5	18·5	17·0	19·4
			Year	17·7	18·9	18·9	19·2
COUNTRY DISTRICTS. All the remaining Registration Sub-Districts of England and Wales—not coming within the above definition of Town Districts	33,103,887	10,190,713	Year	15·3	16·7	16·6	16·2
			March ..	17·2	19·9	22·3	17·3
			June ...	14·9	16·4	16·4	15·4
			Sept.	14·2	14·4	13·6	15·4
			Dec.	14·7	15·9	14·4	16·6

No. II.—SCOTLAND.

BIRTHS, DEATHS, AND MARRIAGES, IN THE YEAR ENDED 31ST DECEMBER, 1901.

I.—*Serial Table:—Number of* BIRTHS, DEATHS, *and* MARRIAGES *in Scotland, and their Proportion to the Population estimated to the Middle of each Year, during each Quarter of the Years* **1901-1897** *inclusive.*

	1901.		1900.		1899.		1898.		1897.	
	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
***1st Quarter*—**										
Births	32,063	2·90	33,134	3·03	30,909	2·86	31,640	2·95	31,720	2·99
Deaths	21,343	1·93	26,106	2·39	22,866	2·11	20,341	1·90	21,996	2·08
Marriages ..	6,942	0·63	7,380	0·67	7,248	0·67	7,293	0·68	7,457	0·70
Mean Temperature	37°·4		36°·0		38°·4		40°·2		38°·0	
***2nd Quarter*—**										
Births	34,646	3·10	34,346	3·10	34,976	3·19	34,444	3·18	33,645	3·14
Deaths	20,029	1·79	19,651	1·78	19,451	1·78	20,493	1·89	20,127	1·88
Marriages ..	8,187	0·73	8,370	0·76	8,615	0·79	8,162	0·75	8,033	0·75
Mean Temperature	50°·0		50°·0		48°·9		49°·2		47°·8	
***3rd Quarter*—**										
Births	33,565	2·97	32,922	2·94	32,931	2·98	32,810	3·00	32,127	2·96
Deaths	18,758	1·66	17,208	1·54	18,730	1·69	18,552	1·69	18,039	1·66
Marriages ..	8,257	0·73	7,965	0·71	8,363	0·76	7,906	0·72	7,559	0·70
Mean Temperature	58°·0		56°·2		57°·0		56°·6		56°·0	
***4th Quarter*—**										
Births	31,905	2·82	30,953	2·77	31,840	2·88	31,985	2·92	31,331	2·89
Deaths	19,973	1·77	19,302	1·72	18,501	1·67	19,020	1·73	18,899	1·74
Marriages ..	7,978	0·71	8,734	0·78	8,709	0·79	8,735	0·80	7,917	0·73
Mean Temperature	41°·3		43°·4		43°·3		44°·8		43°·7	
***Year*—**										
Population .	4,483,774		4,436,864		4,390,448		4,344,519		4,299,073	
Births	132,179	2·95	131,355	2·96	130,656	2·98	130,879	3·01	128,823	3·00
Deaths	80,103	1·79	82,267	1·85	79,548	1·81	78,406	1·80	79,061	1·84
Marriages ..	31,364	0·70	32,449	0·73	32,935	0·75	32,096	0·74	30,966	0·72

II.—*Special Average Table:—Number of Births, Deaths, and Marriages in Scotland and in the Town and Country Districts for each Quarter of the Year ending 31st December,* 1901, *and their Proportion to the Population; also the Number of Illegitimate Births, and their Proportion to the Total Births.*

Registration Groups of Districts.	Total Births.		Illegitimate Births.		Deaths.		Marriages.	
	Number.	Annual Rate per Cent.	Number.	Per Cent. of Total Births.	Number.	Annual Rate per Cent.	Number.	Annual Rate per Cent.
1st Quarter— SCOTLAND	32,063	2·99	2,156	6·7	21,343	1·99	6,942	0·65
Principal towns	13,777	3·06	882	6·4	9,891	2·20	3,363	0·75
Large "	4,513	3·10	244	5·4	2,811	1·93	989	0·68
Small "	7,137	3·17	442	6·2	4,297	1·91	1,442	0·65
Mainland rural	6,060	2·73	562	9·3	3,826	1·72	981	0·44
Insular "	576	1·95	26	4·5	518	1·75	167	0·56
2nd Quarter— SCOTLAND	34,646	3·10	2,114	6·1	20,029	1·79	8,187	0·73
Principal towns	14,816	3·20	913	6·2	9,305	2·01	4,120	0·89
Large "	5,042	3·40	237	4·7	2,483	1·68	1,071	0·72
Small "	7,627	3·21	404	5·3	3,974	1·67	1,600	0·67
Mainland rural	6,582	2·76	528	8·0	3,806	1·60	1,333	0·56
Insular "	579	1·94	32	5·5	461	1·54	63	0·21
3rd Quarter— SCOTLAND	33,565	2·97	2,088	6·2	18,758	1·66	8,257	0·73
Principal towns	14,408	3·07	918	6·4	8,578	1·83	4,510	0·96
Large "	4,813	3·21	203	4·2	2,507	1·67	1,218	0·81
Small "	7,323	3·05	417	5·7	3,877	1·61	1,521	0·63
Mainland rural	•6,333	2·63	508	8·0	3,381	1·40	943	0·39
Insular "	688	2·28	42	6·1	415	1·37	65	0·21
4th Quarter— SCOTLAND	31,905	2·82	1,944	6·1	19,973	1·77	7,978	0·71
Principal towns ...	13,449	2·87	808	6·0	9,357	2·00	3,952	0·84
Large "	4,664	3·11	233	5·0	2,632	1·76	978	0·65
Small "	7,055	2·94	384	5·4	3,951	1·64	1,503	0·63
Mainland rural	6,005	2·49	487	8·1	3,599	1·49	1,385	0·57
Insular "	732	2·42	32	4·4	434	1·44	160	0·53

Population of Scotland.

Population.	Scotland.	Principal Towns.	Large Towns.	Small Towns.	Mainland Rural.	Insular Rural.
By Census of 1901............	4,472,000	1,852,883	592,468	949,976	956,756	119,917
Estimated to the middle of 1901	4,483,774	1,859,785	594,473	952,944	956,809	119,768

III.—*Divisional Table:*—MARRIAGES, BIRTHS, *and* DEATHS *Registered in the Year ended* 31*st December*, 1901.

(Compiled from the Registrar-General's Quarterly Returns.)

1 DIVISIONS. (Scotland.)	2 AREA in Statute Acres.	3 POPULATION, 1901. (*Persons.*)	4 Marriages.	5 Births.	6 Deaths.
		No.	No.	No.	No.
SCOTLAND .... *Totals*	19,639,377	4,472,000	31,364	132,179	80,103
I. Northern	2,261,622	112,292	556	2,502	1,791
II. North-Western........	4,739,876	162,777	707	3,730	2,623
III. North-Eastern	2,429,594	460,354	2,986	13,224	7,183
IV. East Midland	2,790,492	665,182	4,338	17,700	11,555
V. West Midland	2,693,176	353,055	1,995	10,232	5,937
VI. South-Western........	1,462,397	1,862,659	14,628	62,096	36,066
VII. South-Eastern	1,192,524	662,229	5,030	18,214	11,756
VIII. Southern	2,069,696	198,452	1,124	4,481	3,192

No. III.—GREAT BRITAIN AND IRELAND.

SUMMARY *of* MARRIAGES, *in the Year ended* 30*th September*, 1901; *and of* BIRTHS *and* DEATHS, *in the Year ended* 31*st December*, 1901.

(Compiled from the Quarterly Returns of the respective Registrars-General.)

COUNTRIES.	[000's omitted.] Area in Statute Acres.	[000's omitted.] Population, Middle 1901. Estimated.	Marriages.	Per 1,000 of Population.	Births.	Per 1,000 of Population.	Deaths.	Per 1,000 of Population.
		No.	No.	Ratio.	No.	Ratio.	No.	Ratio.
England and Wales	37,327,	32,617,	260,193	8·0	929,270	28·4	551,316	16·9
Scotland	19,639,	4,484,	32,120	7·2	132,179	29·5	80,103	17·8
Ireland	20,323,	4,443,	22,208	5·0	100,966	22·7	79,126	17·8
GREAT BRITAIN AND IRELAND	77,289,	41,544,	314,521	7·6	1,162,415	28·0	710,545	17·1

Trade of United Kingdom, 1901-1900-1899.—*Distribution of* **Exports*** *from United Kingdom according to their Declared Real Value; and the Declared Real Value (Ex-duty) of* **Imports** *at Port of Entry, and therefore including Freight and Importer's Profit.*

Merchandise (*excluding Gold and Silver*) Imported from, and Exported to, the following Foreign Countries, &c.	[000's omitted.] 1901. Imports from	1901. *Exports to*	1900. Imports from	1900. *Exports to*	1889. Imports from	1889. *Exports to*
I.—Foreign Countries.	£	£	£	£	£	£
Northern Europe; viz., Russia, Sweden, Norway, Denmark, and Iceland	51,703,	20,072,	51,562,	23,977,	46,498,	23,687,
Central Europe; viz., Germany, Holland, and Belgium	90,059,	40,864,	86,065,	49,713	83,459,	45,258,
Western Europe; viz., France, Portugal (with Azores, Madeira, &c.), and Spain (with Gibraltar and Canaries)	69,821,	26,062,	73,780,	30,154,	71,796,	23,533,
Southern Europe; viz., Italy, Austrian Empire, Greece, Roumania, Bulgaria, & Malta	10,348,	13,846,	8,532,	14,175,	8,574,	12,448,
Levant; viz., Turkey, Asiatic and European (including Cyprus), and Egypt	17,851,	13,198,	18,353,	11,094,	15,942,	10,395,
Northern Africa; viz., Tripoli, Tunis, Algeria and Morocco	1,696,	1,656,	1,624,	1,484,	1,527,	1,314,
Western Africa	677,	1,306,	806,	2,145,	651,	1,491,
Eastern Africa; with African Ports on Red Sea, Aden, Arabia, Persia, Bourbon, and Kooria Mooria Islands	534,	2,045,	594,	1,742,	552,	2,135,
Indian Seas, Siam, Sumatra, Java, Philippines; other Islands	3,254,	3,570,	2,165,	4,303,	1,721,	3,229,
South Sea Islands	241,	66,	229,	159,	313,	270,
China and Japan, including **Hong Kong**	4,685,	17,576,	4,970,	18,143,	5,652,	17,669,
United States of America	140,454,	18,401,	138,789,	19,781,	120,081,	18,119,
Mexico and Central America	1,067,	2,378,	1,145,	2,962,	1,084,	2,667,
Foreign West Indies, Hayti, &c.	135,	1,740,	184,	1,962,	147,	1,808,
South America (Northern), Colombia, Venezuela, and Ecuador	795,	1,708,	559,	1,246,	795,	1,563,
" **(Pacific)**, Peru, Bolivia, Chili, and Patagonia	6,856,	4,225,	6,135,	4,203,	5,525,	3,059,
" **(Atlantic)** Brazil, Uruguay, and Argentine Republic	17,802,	12,287,	19,517,	14,670,	15,161,	12,922,
Whale Fisheries; Grnlnd., Davis' Straits, Southn. Whale Fishery, Falkland Islands, and French Possessions in North America	133,	40,	195,	58,	210,	36,
Total—Foreign Countries	418,111,	181,040,	415,204,	201,971,	379,688,	181,603
II.—British Possessions.						
British India, Ceylon, and Singapore	38,003,	39,798,	39,892,	35,132,	38,686,	35,314
Austral. Cols.—N. So. W., Victoria & Queensld.	19,917,	16,368,	20,413,	16,854,	20,180,	14,184
" " So. Aus., W. Aus., Tasm., N. Zealand, & Fiji Islands	14,807,	10,622,	15,021,	10,239,	13,148,	8,342
British North America	20,308,	8,154,	22,240,	8,127,	20,730,	7,347,
" W. Indies with Btsh. Guiana & Honduras	2,375,	2,679,	2,484,	2,541,	2,192,	2,637
Cape and Natal	5,155,	17,006,	3,973,	12,758,	6,077,	11,370
Brt. W. Co. of Af., Ascension and St. Helena	1,956,	2,913,	2,138,	2,211,	2,430,	2,287
Mauritius	316,	991,	233,	377,	215,	351
Channel Islands	1,362,	928,	1,477,	982,	1,690,	1,057
Total—British Possessions	104,199,	99,459,	107,871,	89,221,	105,348,	82,889
General Total £	522,310,	280,499,	523,075,	291,192,	485,036,	264,492

* *i.e.*, British and Irish produce and manufactures.

Trade of United Kingdom, for the Years 1900-1896.—*Declared Value of the Total Exports of* **Foreign** *and* **Colonial** *Produce and Manufactures to each Foreign Country and British Possession.*

Merchandise Exported to the following Foreign Countries, &c.	[000's omitted.]				
	1900.	1899.	1898.	1897.	1896.
I.—FOREIGN COUNTRIES.	£	£	£	£	£
Northern Europe; viz., Russia, Sweden, Norway, Denmark, and Iceland	7,514,	6,755,	7,606,	6,477,	6,473,
Central Europe; viz., Germany, Holland, and Belgium	18,608,	21,351,	20,282,	19,372,	20,247,
Western Europe; viz., France, Portugal (with Azores, Madeira, &c.), and Spain (with Gibraltar and Canaries)	7,252,	8,693,	8,166,	6,805,	7,632,
Southern Europe; viz., Italy, Austrian Empire, Greece, and Malta	1,509,	1,589,	1,512,	1,485,	1,159,
Levant; viz., Turkey, Bulgaria, Roumania, Syria and Palestine, and Egypt	573,	505,	675,	688,	432,
Northern Africa; viz., Tripoli, Tunis, Algeria, and Morocco	161,	159,	135,	119,	123,
Western Africa	109,	101,	92,	70,	72,
Eastern Africa; with African Ports on Red Sea, Aden, Arabia, Persia, Bourbon, and Kooria Mooria Islands	86,	165,	134,	129,	118,
Indian Seas, Siam, Sumatra, Java, Philippines; other Islands	93,	52,	39,	45,	48,
China, including **Hong Kong** and Japan	412,	618,	332,	313,	407,
United States of America	17,563,	16,856,	13,818,	16,939,	11,612,
Mexico and Central America	188,	195,	185,	166,	220,
Foreign West Indies and Hayti	749,	796,	391,	520,	523,
South America (Northern), Colombia, Venezuela, and Ecuador	36,	44,	48,	51,	72,
„ **(Pacific)**, Peru, Bolivia, Chili, and Patagonia	402,	294,	273,	256,	254,
„ **(Atlantic)**, Brazil, Uruguay, and Argentine Republic	687,	597,	528,	503,	594,
Other countries (unenumerated)	25,	48,	87,	65,	52,
Total—Foreign Countries...............	55,967,	58,813,	54,303,	53,953,	50,038,
II.—BRITISH POSSESSIONS.					
British India, Ceylon, and Singapore	993,	778,	740,	709,	844,
Austral. Cols.—New South Wales and Victoria, So. Aus., W. Aus., Tasm., and N. Zealand	2,384,	2,240,	2,307,	2,385,	2,439,
British North America	1,532,	1,423,	1,386,	989,	940,
„ W. Indies with Btsh. Guiana & Honduras	413,	365,	389,	410,	427,
Cape and Natal	1,234,	839,	948,	1,004,	1,064,
Brt. W. Co. of Af., Ascension and St. Helena....	359,	304,	289,	236,	225,
Mauritius	26,	22,	22,	18,	21,
Channel Islands	226,	241,	231,	211,	204,
Other possessions	48,	17,	40,	39,	32,
Total—British Possessions	7,215,	6,229,	6,352,	6,001,	6,196,
General Total ....£	63,182,	65,042,	60,655,	59,954,	56,234,

IMPORTS.—(United Kingdom.)—**For the Years 1901-00-1899-98-97.**—*Declared Real Value (Ex-duty), at Port of Entry (and therefore including Freight and Importer's Profit), of Articles of Foreign and Colonial Merchandise Imported into the United Kingdom.*

[000's omitted.]

Foreign Articles Imported.		1901.	1900.	1899.	1898.	1897.
		£	£	£	£	£
Raw Matls.—*Textile*, &c.	Cotton, Raw ...	41,985,	40,983,	27,672,	34,126,	32,195,
	Wool	23,641,	23,917,	26,382,	25,639,	26,752,
	Silk*...................	14,779,	16,347,	18,448,	18,820,	18,787,
	Flax	3,070,	2,512,	2,928,	2,933,	3,203,
	Hemp and Jute	8,550,	7,480,	6,322,	6,110,	5,706,
	Indigo	789,	542,	986,	891,	1,471,
		92,814,	91,781,	82,738,	88,519,	88,114,
,, ,, *Various.*	Hides	2,744,	3,418,	2,788,	2,906,	2,750,
	Petroleum	5,082,	5,559,	4,575,	3,734,	3,335,
	Oils (other)........	4,194,	3,643,	3,362,	2,967,	2,762,
	Metals	27,583,	29,978,	25,422,	19,568,	19,251,
	Tallow	2,333,	2,835,	2,380,	2,066,	1,870,
	Timber...............	24,559,	27,876,	22,882,	21,284,	23,648,
		66,495,	73,304,	61,409,	52,520,	53,616,
,, ,, *Agrcltl.*	Guano	105,	177,	140,	118,	90,
	Seeds	7,873,	7,542,	6,277,	6,013,	5,751,
		7,978,	7,719,	6,417,	6,131,	5,841,
Tropical, &c., Produce.	Tea	9,488,	10,687,	10,620,	10,336,	10,405,
	Coffee and Chic...	3,092,	2,587,	3,339,	3,633,	3,629,
	Sugar & Molasses	19,871,	19,605,	18,449,	17,569,	16,197,
	Tobacco	4,819,	4,799,	5,511,	3,887,	4,066,
	Rice	2,479,	2,408,	2,505,	2,005,	2,116,
	Fruits	9,548,	10,791,	9,252,	8,936,	9,122,
	Wines	4,937,	5,193,	5,630,	6,576,	6,434,
	Spirits	2,281,	2,041,	1,873,	1,812,	2,018,
		56,515,	58,111,	57,179,	54,754,	53,987,
Food	Grain and Meal.	61,241,	58,943,	58,088,	62,909,	58,580,
	Provisions	86,114,	80,857,	70,834,	64,204,	61,428,
		147,355,	139,800,	128,922,	127,113,	115,008,
Remainder of Enumerated Articles		112,692,	110,919,	93,577,	91,699,	87,421,
Total Enumerated Imports		483,849,	481,634,	430,242,	420,736,	403,987,
Add for Unenumerated Imports		38,390,	41,441,	54,794,	49,643,	47,042,
Total Imports		522,239,	523,075,	485,036,	470,379,	451,029,

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* "Silk," inclusive of manufactured silk, "not made up."

EXPORTS.—(United Kingdom.)—**For the Years 1901-1900-1899-98-97.**—*Declared Real Value, at Port of Shipment, of Articles of* British *and* Irish *Produce and Manufactures Exported from the United Kingdom.*

[000's omitted.]

British Produce, &c., Exported.		1901.	1900.	1899.	1898.	1897.
		£	£	£	£	£
Manfrs.—*Textile.*	Cotton Manufactures ..	65,713,	62,009,	59,489,	55,978,	54,044,
	„ Yarn	7,977,	7,741,	8,059,	8,923,	9,930,
	Woollen Manufactures	14,255,	15,682,	14,789,	13,699,	15,976,
	„ Yarn	5,239,	6,123,	6,722,	6,444,	6,595,
	Silk Manufactures........	1,428,	1,638,	1,509,	1,529,	1,338,
	„ Yarn	294,	426,	471,	333,	256,
	Linen Manufactures	5,013,	5,225,	5,073,	4,393,	4,771,
	„ Yarn	825,	934,	909,	885,	976,
		100,744,	99,778,	97,021,	92,184,	93,886,
„ *Sewed.*	Apparel	5,583,	5,287,	4,636,	4,696,	4,980,
	Haberdy. and Mllnry.	1,474,	1,534,	1,537,	1,504,	1,485,
		7,057,	6,821,	6,173,	6,200,	6,465,
Metals, &c.	Hardware and Cutlery	2,079,	2,140,	2,140,	1,987,	2,104,
	Machinery	17,855,	19,620,	19,653,	18,390,	16,256,
	Iron and Steel	25,306,	31,993,	28,101,	22,630,	24,641,
	Copper and Brass........	4,106,	3,556,	4,310,	3,268,	3,019,
	Lead and Tin	1,267,	1,452,	1,223,	940,	862,
	Coals and Culm	30,337,	38,620,	23,093,	18,136,	16,655,
	Ships (New)	9,160,	8,588,	9,197,	—	—
		90,110,	105,969,	87,717,	65,351,	63,537,
Ceramic Manufcts.	Earthenware and Glass	3,046,	3,072,	2,958,	2,705,	2,771,
Indigenous Mnfrs. and Products.	Beer and Ale................	1,785,	1,761,	1,664,	1,623,	1,621,
	Butter	60,	56,	53,	60,	71,
	Cheese	36,	37,	36,	37,	38,
	Candles	433,	398,	412,	329,	333,
	Salt..................................	510,	457,	447,	460,	466,
	Spirits	2,631,	2,363,	2,095,	1,952,	1,844,
		5,455,	5,072,	4,707,	4,461,	4,373,
Various Manufcts.	Books, Printed	1,554,	1,469,	1,444,	1,337,	1,331,
	Furniture	638,	636,	575,	613,	629,
	Leather Manufactures	3,504,	3,398,	3,339,	3,324,	3,381,
	Soap	999,	939,	942,	830,	762,
	Plate and Watches	497,	459,	421,	427,	418,
	Stationery	1,223,	1,070,	1,016,	987,	948,
		8,415,	7,971,	7,737,	7,518,	7,469,
Remainder of Enumerated Articles		46,045,	44,600,	40,470,	38,154,	39,708,
Unenumerated Articles..............................		19,627,	17,909,	17,709,	16,786,	16,011,
Total Exports....................		280,499,	291,192,	264,492,	233,359,	234,220,

SHIPPING.—(United Kingdom.)—*Account of Tonnage of Vessels Entered and Cleared with Cargoes, from and to Various Countries, during the* **Years** *ended Dec.*, **1901-00-1899.**

Countries from whence Entered and to which Cleared.	Total British and Foreign.					
	1901.		1900.		1899.	
	Entered.	Cleared.	Entered.	Cleared.	Entered.	Cleared.
FOREIGN COUNTRIES.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Russia { Northern ports	1,924,064	1,676,373	1,979,167	1,956,252	1,762,062	2,168,804
Russia { Southern ,, ...	547,740	270,955	525,103	347,475	597,748	353,028
Sweden	1,737,249	1,853,688	1,843,058	1,979,608	1,799,888	1,993,825
Norway	1,406,555	1,126,156	1,405,989	1,211,617	1,436,020	1,206,016
Denmark..................	410,106	1,463,092	422,216	1,424,067	428,611	1,415,672
Germany..................	2,397,482	4,454,772	2,360,762	4,701,139	2,275,853	4,345,074
Holland	2,518,068	2,467,252	2,465,647	2,844,945	2,355,956	2,549,336
Belgium	2,186,905	2,154,615	2,016,086	2,293,539	1,992,273	2,140,896
France..................	2,648,571	5,162,574	2,819,577	5,838,347	2,814,032	5,131,719
Spain	3,158,742	1,688,580	3,551,366	1,662,124	3,837,259	1,572,384
Portugal	235,466	534,750	170,565	548,379	160,145	507,567
Italy	267,022	3,089,487	343,386	2,888,566	353,098	3,024,536
Austria-Hungary	119,883	212,451	85,757	220,923	95,640	252,098
Greece..................	180,473	251,917	188,584	174,819	206,156	233,453
Turkey	351,204	301,878	267,436	302,737	227,850	350,413
Roumania	374,216	114,820	126,246	75,939	217,663	164,722
Egypt	415,452	1,134,899	397,387	1,048,835	422,489	1,189,853
Algeria	205,023	240,702	199,107	271,952	239,413	256,282
Portuguese Possessions in Eastern Africa	18,245	173,627	16,269	175,835	113,800	352,522
United States of America	7,566,457	5,275,781	7,353,974	4,383,727	7,072,528	4,384,145
Mexico, Foreign W. Indies, and Central America	101,500	244,422	93,796	296,162	136,921	322,943
Republic of Colombia	127,475	222,730	95,925	192,537	113,597	208,257
Brazil	165,563	683,116	179,408	731,680	125,726	791,027
Peru..................	55,912	73,682	58,549	66,655	67,183	70,513
Chile	187,539	374,661	217,906	305,106	227,260	364,370
Uruguay	5,665	205,563	13,407	173,225	5,950	206,171
Argentine Republic	861,202	956,135	1,205,126	823,195	1,250,448	916,233
China	32,552	105,997	21,388	83,014	38,077	70,257
Java..................	28,312	193,735	24,897	186,107	22,069	126,166
Japan	298,255	441,925	315,134	478,117	257,960	423,328
Other countries	394,540	479,890	337,934	558,912	276,486	474,422
Total, Foreign Countries.	30,927,438	37,630,225	31,101,152	38,245,535	30,980,161	37,566,032
BRITISH POSSESSIONS.						
North American Colonies	1,822,499	1,090,242	1,912,333	1,012,514	1,987,725	1,069,480
British India	1,157,584	1,104,464	1,038,278	964,515	1,223,947	1,226,072
Mauritius, Ceylon, Straits Settlements, & Hong Kong	39,553	304,822	47,944	308,024	58,068	302,560
Australia and New Zealand	1,179,597	1,066,214	980,045	985,766	1,013,448	923,732
West Indies	112,713	134,457	61,082	104,407	69,971	118,985
Channel Islands..............	378,772	308,420	377,160	338,217	396,071	344,468
Gibraltar and Malta	11,017	380,678	1,757	461,123	5,801	393,808
Cape of G. Hope and Natal	484,496	996,909	460,550	985,791	344,551	661,021
Other possessions	224,465	362,055	214,709	336,327	196,133	382,162
Total, British Possessions	5,410,696	5,748,261	5,093,858	5,496,684	5,295,715	5,422,288
TOTAL FOREIGN COUNTRIES AND BRITISH POSSESSIONS.						
Twelve Months ended December, { 1901........	36,338,134	43,378,486	—	—	—	—
Twelve Months ended December, { '00........	—	—	36,195,010	43,742,219	—	—
Twelve Months ended December, { '99........	—	—	—	—	36,225,876	42,988,320

GOLD AND SILVER BULLION AND SPECIE.—(United Kingdom.) —*Declared Real Value of*, IMPORTED AND EXPORTED *for the* **Years 1901-1900-1899.**

[000's omitted.]

Countries.	1901.		1900.		1899.	
	Gold.	*Silver.*	Gold.	*Silver.*	Gold.	*Silver.*
Imported from—	£	£	£	£	£	£
Australasia	5,567,	193,	6,459,	148,	5,056,	208,
S. America, Brazil, Mexico, W. Indies	1,521,	537,	1,621,	490,	1,584,	1,054,
United States	264,	9,719,	5,871,	11,460,	2,379,	8,822,
	7,352,	10,449,	13,951,	12,098,	9,019,	10,084,
France	1,175,	419,	2,156,	394,	1,841,	726,
Germany, Holland, Belg., and Sweden	945,	404,	4,354,	660,	4,199,	1,759,
Portugal, Spain, and Gibraltar	337,	30,	442,	34,	275,	32,
Malta and Egypt	1,166,	62,	813,	24,	140,	46,
China, with Hong Kong and Japan	283,	1,	392,	—	1,	—
West Coast of Africa	37,	98,	69,	97,	70,	16,
British Possessions in South Africa	1,962,	6,	379,	8,	15,015,	48,
All other Countries	7,459,	33,	4,135,	7,	1,973,	17,
Totals Imported	20,716,	11,502,	26,191,	13,322,	32,533,	12,728,
Exported to—						
France	1,698,	1,112,	2,360,	1,287,	1,379,	946,
Germany, Holland, Belg., and Sweden	3,819,	271,	5,373,	227,	4,787,	844,
Russia	—	62,	—	422,	119,	2,983,
Portugal, Spain, and Gibraltar	12,	41,	8,	40,	1,237,	300,
	5,529,	1,486,	7,741,	1,976,	7,522,	5,073,
B. India, China, Hong Kong, and Japan	2,548,	9,039,	3,181,	10,075,	2,545,	7,743,
United States	52,	72,	1,083,	29,	1,324,	18,
South Africa	300,	185,	1,780,	314,	4,225,	93,
S. America, Brazil, Mexico, W. Indies	2,115,	127,	2,265,	104,	4,483,	180,
All other Countries	3,421,	1,141,	2,347,	1,077,	1,487,	848,
Totals Exported	13,965,	12,050,	18,397,	13,575,	21,536,	13,955,
Excess of imports	6,751,	—	7,794,	—	10,997,	—
" exports	—	548,	—	253,	—	1,227,

BRITISH CORN.—*Gazette Average Prices* (ENGLAND AND WALES), *Weekly for* 1901.

Weeks ended on Saturday.	Weekly Average. (Per Imperial Quarter.)						Weeks ended on Saturday.	Weekly Average. (Per Imperial Quarter.)					
	Wheat.		Barley.		Oats.			Wheat.		Barley.		Oats.	
1901.	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	1901.	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Jan. 5	26	5	25	4	17	2	July 6	27	8	21	9	19	10
„ 12	26	7	25	6	17	3	„ 13	27	2	23	10	19	9
„ 19	26	11	25	9	17	3	„ 20	27	3	23	4	19	11
„ 26	26	10	25	6	17	6	„ 27	27	3	22	1	19	4
Feb. 2	26	7	25	7	17	8	Aug. 3	27	6	23	1	20	–
„ 9	26	8	25	7	17	7	„ 10	27	7	22	1	19	4
„ 16	26	4	25	4	17	7	„ 17	27	4	27	2	18	9
„ 23	26	1	25	–	17	7	„ 24	27	3	23	7	18	1
							„ 31	27	–	24	8	17	10
March 2	25	11	25	–	17	9							
„ 9	25	9	25	4	17	7	Sept. 7	26	5	25	1	17	6
„ 16	25	9	25	1	17	7	„ 14	26	2	24	11	17	4
„ 23	25	8	24	11	17	9	„ 21	26	–	25	5	17	4
„ 30	26	–	24	9	18	–	„ 28	25	10	25	10	17	2
April 6	26	3	25	8	18	–	Oct. 5	25	8	26	3	17	7
„ 13	26	5	26	–	18	1	„ 12	25	9	26	5	17	6
„ 20	26	8	25	7	18	8	„ 19	25	10	26	8	17	8
„ 27	26	8	25	8	18	8	„ 26	25	11	26	10	17	5
May 4	26	9	26	4	19	1	Nov. 2	26	2	26	10	17	7
„ 11	27	3	26	2	19	1	„ 9	26	6	27	–	17	8
„ 18	27	7	24	2	19	4	„ 16	26	9	26	9	18	3
„ 25	27	7	24	1	19	8	„ 23	27	1	26	10	18	7
							„ 30	27	1	26	9	18	9
June 1	27	7	23	8	19	9							
„ 8	27	6	22	9	20	1	Dec. 7	27	1	26	7	19	–
„ 15	27	8	24	–	19	7	„ 14	27	2	26	8	19	3
„ 22	27	6	23	2	20	3	„ 21	27	7	26	8	19	8
„ 29	27	6	25	4	20	–	„ 28	27	7	26	8	19	10

BRITISH CORN.—*Gazette Average Prices* (ENGLAND AND WALES), *Summary of, for* **1901**, *with those for* **1900** *added for comparison.*

Average for	Per Imperial Quarter, 1901.						Per Imperial Quarter, 1900.					
	Wheat.		Barley.		Oats.		Wheat.		Barley.		Oats.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
January	26	8	25	6	17	3	25	10	25	7	16	2
February	26	5	25	4	17	7	25	11	25	1	16	7
March	25	9	25	–	17	8	25	11	24	8	16	11
First quarter ended Lady Day	26	3	25	3	17	6	25	11	25	1	16	7
April	26	6	25	7	18	4	25	11	24	9	17	6
May	27	3	25	2	19	3	25	8	24	7	18	1
June	27	6	23	9	19	11	25	9	23	8	18	10
Second quarter ended Midsummer	27	1	24	9	19	3	25	9	24	8	18	2
July	27	4	22	9	19	8	28	8	23	6	19	4
August	27	4	24	–	18	9	28	9	23	10	19	4
September	26	1	25	3	17	4	28	6	25	7	17	5
Third quarter ended Michælmas	26	11	24	–	18	7	28	7	24	5	18	7
October	25	9	26	6	17	6	28	5	26	3	16	11
November	26	8	26	10	18	2	27	2	25	11	16	11
December	27	4	26	7	19	5	26	8	25	8	17	2
Fourth quarter ended Christmas	26	7	26	8	18	4	27	4	25	11	17	–
THE YEAR	26	9	25	2	18	5	26	11	24	11	17	7

REVENUE OF THE UNITED KINGDOM.

CALENDAR YEARS.

Net Produce in QUARTERS *and* YEARS *ended* 31*st* DEC., 1901-1900-1899-98

[000's omitted.]

QUARTERS, ended 31st Dec.	1901.	1900.	1901.		Corresponding Quarters.	
			Less.	More.	1899.	1898.
	£	£	£	£	£	£
*Customs	9,275,	7,269,	—	2,006,	6,115,	5,919,
*Excise	9,580,	9,540,	—	40,	8,750,	8,500,
*Stamps and estate, &c., duties	6,230,	4,860,	—	1,370,	5,020,	4,740,
Taxes (Land Tax and House Duty)	40,	60,	20,	—	40,	40,
Post Office	3,830,	3,670,	—	160,	3,430,	3,290,
Telegraph Service	895,	875,	—	20,	830,	780,
	29,850,	26,274,	20,	3,596,	24,185,	23,269,
Property and Income Tax	2,660,	2,190,	—	470,	1,540,	1,530,
	32,510,	28,464,	20,	4,066,	25,725,	24,799,
Crown Lands	190,	190,	—	—	210,	190,
Interest on Advances	10,	3,	—	7,	11,	12,
Miscellaneous	362,	818,	456,	—	517,	578,
Totals	33,072,	29,475,	476,	4,073,	26,463,	25,579,
			NET INCR. £3,597,			

YEARS, ended 31st Dec.	1901.	1900.	1901.		Corresponding Years.	
			Less.	More.	1899.	1898.
	£	£	£	£	£	£
*Customs	30,192,	24,710,	—	5,482,	21,511,	20,975,
*Excise	32,990,	33,070,	80,	—	30,220,	29,000,
*Stamps and estate, &c., duties	21,720,	22,275,	555,	—	20,610,	18,960,
Taxes (Land Tax and House Duty)	2,460,	2,460,	—	—	2,425,	2,470,
Post Office	14,140,	13,650,	—	490,	13,070,	12,520,
Telegraph Service	3,470,	3,455,	—	15,	3,305,	3,120,
	104,972,	99,620,	635,	5,987,	91,141,	87,045,
Property and Income Tax	30,160,	20,010,	—	10,150,	18,310,	17,490,
	135,132,	119,630,	635,	16,137,	109,451,	104,535,
Crown Lands	500,	450,	—	50,	450,	425,
Interest on Advances	836,	826,	—	10,	783,	711,
Miscellaneous	1,912,	2,522,	610,	—	2,032,	1,770,
Totals	138,380,	123,428,	1,245,	16,197,	112,716,	107,441,
			NET INCR. £14,952,			

* Exclusive of transfers to local taxation account.

REVENUE OF THE UNITED KINGDOM.

FINANCIAL YEARS.

Net Produce in Quarters in **1901**, *and in Financial Years ended* 31*st March*, **1900-01, 1899-1900, 1898-99, 1897-98.**

QUARTERS, ended	31st March, 1901.	30th June, 1901.	30th September, 1901.	31st December, 1901.	31st March, 1902.
	£	£	£	£	£
*Customs	9,051	5,181	6,685	9,275	—
*Excise	8,790	6,580	8,040	9,580	—
*Stamps and estate, &c., duties	5,450	5,270	4,770	6,230	—
Taxes (Land Tax and House Duty)	1,870	500	50	40	—
Post Office	4,400	2,620	3,290	3,830	—
Telegraph Service	770	830	975	895	—
	30,331	20,981	23,810	29,850	—
Property and Income Tax	19,690	6,040	1,770	2,660	—
	50,021	27,021	25,580	32,510	—
Crown Lands	125	110	75	190	—
Interest on Advances	334	9	483	10	—
Miscellaneous	427	637	486	362	—
Totals	50,907	27,777	26,624	33,072	—

YEARS, ended 31st March,	1900-01.	1899-1900.	1900-01.		Corresponding Years.	
			Less.	More.	1898-99.	1897-98.
	£	£	£	£	£	£
*Customs	26,262	23,800	—	2,462	20,850	21,798
*Excise	33,100	32,100	—	1,000	29,200	28,300
*Stamps and estate, &c., duties	20,805	22,520	1,715	—	19,030	18,750
Taxes (Land Tax and House Duty)	2,475	2,460	—	15	2,370	2,450
Post Office	13,800	13,300	—	500	13,710	12,170
Telegraph Service	3,450	3,350	—	100	3,150	3,010
	99,892	97,530	1,715	4,077	87,310	86,478
Property and Income Tax	26,920	18,750	—	8,170	18,000	17,250
	126,812	116,280	1,715	12,247	105,310	103,728
Crown Lands	500	450	—	50	430	415
Interest on Advances	830	834	4	—	713	734
Miscellaneous	2,243	2,276	33	—	1,883	1,737
Totals	130,385	119,840	1,752	12,297	108,336	106,614
			NET INCR. £10,545			

* Exclusive of transfers to local taxation account.

BANK OF ENGLAND.

Pursuant to the Act 7th and 8th Victoria, cap. 32 (1844)

[0,000's omitted.]

1	2	3	4	5	6	7
Issue Department.					Collateral Columns.	
Liabilities.		Assets.				
Notes Issued.	Dates. (Wednesdays.)	Government Debt.	Other Securities.	Gold Coin and Bullion.	Notes in Hands of Public. (Col. 1 minus col. 16.)	Minimum Rates of Discount at Bank of England.
£ Mlns.	1901.	£ Mlns.	£ Mlns.	£ Mlns.	£ Mlns.	Per cnt.
44,85	Jan. 2	11,02	6,76	27,08	30,23	5
45,77	„ 9	11,02	6,76	27,99	29,51	
47,81	„ 16	11,02	6,76	29,53	29,12	
48,39	„ 23	11,02	6,76	30,61	28,58	
48,75	„ 30	11,02	6,76	30,98	28,77	
48,63	Feb. 6	11,02	6,76	30,86	28,89	4½
49,62	„ 13	11,02	6,76	31,84	28,64	
51,10	„ 20	11,02	6,76	33,33	28,41	4
51,88	„ 27	11,02	6,76	34,11	28,60	
52,43	Mar. 6	11,02	6,76	34,65	28,66	
52,36	„ 13	11,02	6,76	34,59	28,46	
52,18	„ 20	11,02	6,76	34,40	28,38	
52,02	„ 27	11,02	6,76	34,25	29,22	
50,06	April 3	11,02	6,76	32,29	30,07	
49,78	„ 10	11,02	6,76	31,95	29,63	
51,04	„ 17	11,02	6,76	33,27	29,19	
51,78	„ 24	11,02	6,76	34,01	29,15	
51,26	May 1	11,02	6,76	33,48	29,75	
51,26	„ 8	11,02	6,76	33,49	29,73	
51,02	„ 15	11,02	6,76	33,24	29,66	
51,05	„ 22	11,02	6,76	33,27	29,57	
51,77	„ 29	11,02	6,76	34,00	29,55	
52,35	June 5	11,02	6,76	34,57	29,73	3½
52,86	„ 12	11,02	6,76	35,08	29,35	3
53,52	„ 19	11,02	6,76	35,74	29,38	
54,11	„ 26	11,02	6,76	36,34	29,99	
53,31	July 3	11,02	6,76	35,54	30,93	
52,93	„ 10	11,02	6,76	35,16	30,62	
53,26	„ 17	11,02	6,76	35,48	30,40	
53,35	„ 24	11,02	6,76	35,58	30,18	
52,98	„ 31	11,02	6.76	35,20	30,75	
52,25	Aug. 7	11,02	6,76	34,48	30,63	
53,42	„ 14	11,02	6,76	35,64	30,14	
54,78	„ 21	11,02	6,76	37,00	29,79	
55,13	„ 28	11,02	6,76	37,36	29,72	
54,89	Sept. 4	11,02	6,76	37,12	30,03	
54,85	„ 11	11,02	6,76	37,07	29,67	
55,14	„ 18	11,02	6,76	37,36	29,39	
55,27	„ 25	11,02	6,76	37,49	29,40	
53,86	Oct. 2	11,02	6,76	36,08	30,55	
53,02	„ 9	11,02	6,76	35,24	30,06	
52,79	„ 16	11,02	6,76	35,01	29,70	
52,01	„ 23	11,02	6,76	34,24	29,30	
51,21	„ 30	11,02	6,76	33,44	29,55	4
50,67	Nov. 6	11,02	6,76	32,89	29,86	
50,43	„ 13	11,02	6,76	32,65	29,42	
50,62	„ 20	11,02	6,76	32,85	29,07	
50,82	„ 27	11,02	6,76	33,04	29,28	
50,82	Dec. 4	11,02	6,76	33,05	29,48	
50,64	„ 11	11,02	6,76	32,86	29,21	
49,98	„ 18	11,02	6,76	32,21	29,57	
47,82	„ 24	11,02	6,76	30,05	30,15	

—WEEKLY RETURN.

for Wednesday in each Week, during the Year 1901.

[0,000's omitted.]

8	9	10	11	12	13	14	15	16	17	18
BANKING DEPARTMENT.										
Liabilities.					Dates. (Wednesdys.)	Assets.				Totals of Liabilities and Assets.
Capital and Rest.		Deposits.		Seven Day and other Bills.		Securities.		Reserve.		
Capital.	Rest.	Public.	Private.			Govern-ment.	Other.	Notes.	Gold and Silver Coin.	
£ Mlns.	£ Mlns.	£ Mlns.	£ Mlns.	£ Mlns.	1901.	£ Mlns.	£ Mlns.	£ Mlns.	£ Mlns.	£ Mlns.
14,55	3,28	8,78	45,95	,11	Jan. 2	20,68	35,78	14,62	1,59	72,67
14,55	3,51	6,96	45,63	,14	„ 9	20,68	32,23	16,26	1,62	70,80
14,55	3,47	7,03	43,71	,21	„ 16	18,10	31,06	18,19	1,64	68,99
14,55	3,52	8,51	39,52	,22	„ 23	16,18	28,65	19,80	1,68	66,32
14,55	3,50	8,32	40,10	,21	„ 30	15,43	29,59	19,98	1,69	66,69
14,55	3,52	8,32	38,70	,18	Feb. 6	15,10	28,66	19,74	1,77	65,27
14,55	3,50	8,97	37,28	,20	„ 13	13,40	28,38	20,98	1,75	64,50
14,55	3,54	8,17	38,44	,22	„ 20	11,24	29,22	22,70	1,77	64,92
14,55	3,55	12,92	41,37	,19	„ 27	12,11	35,44	23,28	1,75	72,58
14,55	3,76	12,27	39,68	,22	Mar. 6	12,31	32,75	23,76	1,66	70,48
14,55	3,77	12,28	38,09	,20	„ 13	12,31	30,85	23,90	1,83	68,89
14,55	3,78	13,15	37,53	,19	„ 20	12,31	31,22	23,79	1,89	69,21
14,55	3,83	13,58	39,30	,18	„ 27	12,23	34,46	22,80	1,94	71,43
14,55	3,84	10,30	38,94	,22	April 3	11,83	34,18	19,99	1,86	67,86
14,55	3,17	7,37	39,81	,13	„ 10	13,33	29,73	20,10	1,87	65,03
14,55	3,18	9,69	38,15	,14	„ 17	13,52	28,46	21,85	1,88	65,71
14,55	3,19	8,27	43,43	,18	„ 24	13,82	31,31	22,63	1,86	69,62
14,55	3,17	9,84	40,26	,18	May 1	13,76	30,77	21,51	1,96	67,99
14,55	3,18	7,66	39,72	,19	„ 8	13,76	28,02	21,53	1,99	65,30
14,55	3,19	6,60	46,46	,19	„ 15	13,76	33,97	21,36	1,91	71,00
14,55	3,19	10,50	37,94	,18	„ 22	14,16	28,72	21,48	2,02	66,38
14,55	3,17	8,54	39,80	,15	„ 29	14,15	27,76	22,22	2,07	66,21
14,55	3,14	6,17	41,78	,17	June 5	14,15	26,98	22,62	2,06	65,82
14,55	3,14	5,26	43,65	,18	„ 12	14,15	27,03	23,51	2,09	66,79
14,55	3,15	11,39	38,96	,18	„ 19	14,80	27,26	24,13	2,04	68,23
14,55	3,16	11,85	40,89	,18	„ 26	14,80	29,63	24,13	2,08	70,64
14,55	3,21	10,05	46,65	,17	July 3	14,80	35,41	22,38	2,06	74,65
14,55	3,44	8,91	42,19	,19	„ 10	17,30	27,54	22,31	2,15	69,29
14,55	3,46	12,86	40,74	,17	„ 17	17,94	28,85	22,86	2,12	71,78
14,55	3,47	10,23	39,65	,14	„ 24	16,20	26,56	23,17	2,10	68,03
14,55	3,48	8,41	44,09	,10	„ 31	16,20	30,09	22,23	2,11	70,64
14,55	3,52	7,38	40,62	,12	Aug. 7	16,20	26,33	21,62	2,05	66,20
14,55	3,53	10,43	39,19	,17	„ 14	16,50	26,01	23,28	2,08	67,87
14,55	3,54	9,62	42,27	,17	„ 21	16,38	26,72	24,99	2,07	70,16
14,55	3,56	9,25	42,01	,14	„ 28	16,39	25,65	25,41	2,05	69,51
14,55	3,75	9,41	41,07	,15	Sept. 4	16,38	25,71	24,86	1,97	68,93
14,55	3,77	11,48	40,00	,17	„ 11	16,68	26,05	25,18	2,06	69,97
14,55	3,77	11,67	40,56	,18	„ 18	16,68	26,17	25,74	2,14	70,74
14,55	3,80	10,88	40,76	,16	„ 25	16,68	25,46	25,87	2,14	70,15
14,55	3,79	10,87	41,20	,14	Oct. 2	18,02	27,16	23,31	2,08	70,57
14,55	3,14	8,27	41,77	,18	„ 9	19,52	26,31	22,96	2,13	70,92
14,55	3,14	10,19	41,17	,18	„ 16	18,02	25,96	23,09	2,16	69,24
14,55	3,15	11,01	40,11	,19	„ 23	18,02	26,17	22,71	2,11	69,01
14,55	3,15	10,33	41,81	,19	„ 30	18,02	28,14	21,66	2,22	70,04
14,55	3,15	7,62	41,95	,17	Nov. 6	17,52	26,82	20,81	2,29	67,44
14,55	3,17	10,70	39,85	,15	„ 13	17,53	27,61	21,01	2,27	68,41
14,55	3,18	11,95	37,92	,20	„ 20	17,53	26,36	21,55	2,37	67,80
14,55	3,19	10,37	40,30	,19	„ 27	17,53	27,22	21,53	2,33	68,60
14,55	3,13	9,12	40,01	,18	Dec. 4	17,53	25,83	21,35	2,30	67,00
14,55	3,14	11,10	37,47	,19	„ 11	17,47	25,24	21,42	2,32	66,46
14,55	3,17	10,49	39,46	,18	„ 18	17,48	27,78	20,41	2,19	67,85
14,55	3,18	10,74	37,60	,14	„ 24	17,48	29,05	17,67	2,02	66,22

LONDON CLEARING; CIRCULATION, PRIVATE AND PROVINCIAL.

The London Clearing, and the Average Amount of Promissory Notes in Circulation in ENGLAND *and* WALES *on Saturday in each Week during the Year* **1901**; *and in* SCOTLAND *and* IRELAND, *at the Dates, as under.*

[0,000's omitted.]

	ENGLAND AND WALES.				SCOTLAND.				IRELAND.		
DATES. *Saturday.*	*London:* Cleared in each Week on the preceding *Wednesday.*	Private Banks. (Fixed Issues, Dec., 1,15).	Joint Stock Banks. (Fixed Issues, Dec., 1,85).	TOTAL. (Fixed Issues, Dec., 2,50).	Average for Four Weeks ending	£5 and upwards.	Under £5.	TOTAL. (Fixed Issues, Dec., 2,68).	£5 and upwards	Under £5.	TOTAL. (Fixed Issues, Dec., 6,35).
1901.	£	£	£	£	1901.	£	£	£	£	£	£
Jan. 5......	260,49	34	82	1,16							
„ 12......	181,29	34	82	1,16							
„ 19......	227,06	34	80	1,14	Jan. 19...	2,36	5,48	7,84	4,10	2,78	6,88
„ 26......	164,08	34	80	1,14							
Feb. 2......	160,11	33	80	1,13							
„ 9......	215,56	33	80	1,13							
„ 16......	162,13	32	79	1,12	Feb. 16...	2,18	5,25	7,43	4,13	2,73	6,86
„ 23......	224,98	32	79	1,11							
Mar. 2......	167,13	31	80	1,11							
„ 9......	235,73	31	80	1,12							
„ 16......	148,97	31	80	1,11	Mar. 16...	2,15	5,24	7,40	4,16	2,67	6,83
„ 23......	193,96	31	80	1,11							
„ 30......	154,01	32	82	1,14							
April 6......	238,21	34	85	1,19							
„ 13......	127,52	34	85	1,19	April 13...	2,15	5,34	7,49	4,26	2,69	6,95
„ 20......	206,47	34	85	1,18							
„ 27......	159,31	33	85	1,18							
May 4......	221,94	34	87	1,21							
„ 11......	182,43	34	87	1,22	May 11...	2,32	5,56	7,88	4,49	2,71	7,20
„ 18......	239,34	35	88	1,23							
„ 25......	185,09	34	87	1,21							
June 1......	137,99	34	84	1,18							
„ 8......	215,30	34	83	1,16	June 8...	2,70	5,74	8,43	4,16	2,61	6,77
„ 15......	145,92	33	81	1,14							
„ 22......	210,77	32	79	1,12							
„ 29......	159,32	32	79	1,11							
July 6......	267,59	33	79	1,12	July 6...	2,43	5,62	8,05	3,87	2,56	6,42
„ 13......	164,84	32	77	1,09							
„ 20......	216,09	31	76	1,07							
„ 27......	165,61	30	75	1,06							
Aug. 3......	196,04	30	76	1,07	Aug. 3...	2,33	5,56	7,89	3,75	2,51	6,26
„ 10......	163,01	31	75	1,06							
„ 17......	153,40	30	74	1,04							
„ 24......	179,20	30	73	1,03							
„ 31......	133,75	29	70	99	„ 31...	2,30	5,46	7,76	3,65	2,50	6,14
Sept. 7......	202,93	30	71	1,01							
„ 14......	142,77	29	72	1,01							
„ 21......	167,23	30	72	1,02							
„ 28......	143,24	31	74	1,05	Sept. 28...	2,31	5,51	7,82	3,78	2,61	6,39
Oct. 5......	217,40	33	79	1,12							
„ 12......	166,41	33	80	1,13							
„ 19......	198,08	33	79	1,13							
„ 26......	153,71	33	80	1,13	Oct. 26...	2,31	5,60	7,92	4,20	2,84	7,04
Nov. 2......	193,57	33	81	1,14							
„ 9......	172,54	33	81	1,15							
„ 16......	200,70	33	81	1,14							
„ 23......	171,07	34	82	1,16	Nov. 23...	2,57	5,82	8,40	4,29	2,87	7,16
„ 30......	157,73	34	81	1,16							
Dec. 7......	219,27	33	70	1,03							
„ 14......	162,42	32	68	1,00							
„ 21......	199,03	32	67	1,00	Dec. 21...	2,56	5,70	8,27	4,03	2,79	6,81
„ 28......	144,59	31	67	98							

Vol. LXV.] [Part II.

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A STATISTICAL REVIEW *of the* INCOME *and* WEALTH *of* BRITISH INDIA.

By FRED. J. ATKINSON.

[Read (in the Author's absence) before the Royal Statistical Society, 18th February, 1902. The Right Hon. LORD AVEBURY, P.C., F.R.S., D.C.L., LL.D., President, in the Chair.]

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I.—*Introductory.*

IN his speech in March, 1901, during the debate on the Indian Budget for the year 1901-02, His Excellency the Viceroy of India, referred to the oft-repeated cry of the increasing poverty of India, and the gradual reduction of the average income per head of the population, and stated that, from figures collected by the Famine Commission of 1898, it was shown that the agricultural income in that year was 450 crores of rupees, whereas the Famine Commission of 1880 estimated the average agricultural income in that year to have been 350 crores. Thus, after allowing for the increase in the population, the average income had risen from R. 18 per head in 1880, to R. 20 per head in 1898. Lord Curzon then assumed that the non-agricultural income had increased in the same ratio as the agricultural, and it followed that the average income all round rose from R. 27 per head in 1880, to R. 30 in 1898, an increase of 11 per cent. In arriving at this conclusion the Viceroy estimated the area of cultivation to have been 194 million acres in 1880, and 217 million in 1898, and the yield per acre 730 lbs. in 1880, against 840 lbs. in 1898, this increase having been due to improved cultivation and extended irrigation; but he added that there was an element of the conjectural in the figures for 1898; but so there was in those of 1880, and the uncertainty in both was precisely the same.

These figures and statements have, however, been doubted in certain quarters, notably by Mr. W. Digby, C.I.E. That gentleman argues that Lord Curzon's figures are worthless, and that there are independent grounds for thinking that there has been a diminution of 30 per cent. in the average income between the years 1880 and 1900.

Mr. Digby states that the Famine Commission of 1880 gave a cultivated area of 182,750,000, and the Director-General of Statistics gives 196,500,000 in 1898, against the Viceroy's figures of 194 million and 217 million, and thus the increased cultivation only amounted to 13,750,000 instead of 23 million as stated by Lord Curzon. He next gives figures to demonstrate the untrustworthiness of the statistics of the yield per acre, and then proceeds to argue that the average agricultural income actually decreased during the period.

As regards the non-agricultural income, Mr. Digby states that 85 per cent. of the population is agricultural, and 15 per cent. non-agricultural, and it is absurd to suppose, therefore, that the income of the 15 per cent. is equal to one-half of that of the 85 per cent., and adds that a detailed inquiry in the Punjab showed that the non-agricultural income was one-third of the agricultural, and finally he states that the non-agricultural income had not increased in the same proportion as the agricultural, and there was nothing to show that it had increased at all. The net result of his calculations is an all round reduction of 30 per cent. in the average income.

It is not proposed to discuss the arguments as offered on either side, but it may be pointed out that, whereas Lord Curzon very properly included the twice cropped area twice in his figures, Mr. Digby omits the second crop altogether. Mr. Digby's estimate of 85 per cent. and 15 per cent. of the population being agricultural and non-agricultural, respectively, is also misleading. The accurate proportions are 63 per cent. and 37 per cent., and the 63 per cent. includes produce dealers, who might justly be included in the non-agricultural, and finally his arguments working up to a 30 per cent. diminution in the average income between the years 1880 and 1900 are based on a comparison between the two years, the figures for 1880 apparently being worked out in a different way to those for 1900, a method of procedure which may be considered to destroy any value the figures might otherwise possess.

The Indian Congress which sat in Madras also cast a doubt on the Viceroy's conclusions, and many others both in England and in India will no doubt follow suit in due course. Indeed, since this paper was written many have actually done so.

My object, therefore, is to ascertain, so far as it is possible to do so, the actual facts of the case, worked out on altogether independent lines, from such information as is available on the subject; but it must be admitted from the outset that absolutely accurate figures are a practical impossibility, because there are no statistics of cultivation of any sort for parts of India before 1892-93, and the estimated yield per acre of the different classes of produce differs so materially in different years in the published returns, that taking any single year by itself cannot be regarded as a reliable guide. With all these difficulties before us, it may be argued that any comparison between any two years at long intervals can only be based on assumptions, and that statistics prepared on such lines are worthless, and had better be left alone. To this the late Professor Söetbeer's reply to a similar argument may be given. The Professor remarked in 1886, at the commencement of his work "Materialien": "It is perfectly true "no statistics are better than false statistics, but we have here to "deal not with false statistics, but with estimates and compilations "by which, though with wide limits of error, we try to get near the "truth, and which are no more open to the charge of over-statement "than to that of under-statement."

In the present case, although statistics of area of cultivation and yield per acre are wanting for the earlier years, there is a considerable amount of information available, which, by careful weighing and consideration, enables us, by a scientific process of deduction, to arrive at results which may be accepted as sufficiently accurate for all practical purposes. These figures may err, but whatever errors there may be, the statistics have been prepared so that the errors, if any, may be in favour of the *earlier* year under comparison.

The Viceroy compared the years 1880 and 1898; 1880 closely succeeded famine, and in 1898 actual famine was in the land; it has therefore been considered advisable to take the two years 1875 and 1895, which were free from unusual and extraneous influences. It has also been thought advisable to make the comparison for British territory only; the statistics for the native and feudatory States are very imperfect and unreliable, and the Government of India is concerned with the territory which it governs and taxes, and not with the native States, the administration of which is left in the hands of the native rulers.

In considering the question it is necessary to separate the population into three classes, (1) Agricultural; (2) Non-agricultural of small means, and (3) Those of ample or sufficient means. In this view Table I has been prepared from the census figures of 1871 and 1891, with proportionate increases to make them applicable to 1875 and 1895, and the population is divided into the three sections named.

Under agriculture has been included all connected with the produce of the earth, such as grain, vegetable, sugar, tobacco, and drug preparers and dealers. These, to the number of about 3 million, should properly be classed as industrial, but for the purposes of this paper have been taken under agriculture. The head also includes land holders and tenants, not cultivating, to the number of 15½ million in 1891.

It will be noticed that what may be termed the poorer classes form 97·6 per cent. of the entire population, of which 62·9 per cent. are under agriculture, and 34·7 per cent. under non-agriculture. Included among these, however, there must necessarily be many who have wealth in more or less quantity, but it is proposed to consider wealth due to invested savings separately, and for the purposes of this paper the ordinary income obtained by the respective profession or calling of each individual is only treated with in the calculations of the average income of the poorer classes. Hoards are, of course, necessarily omitted from the annual income.

It will also be noticed that native commissioned officers, European non-commissioned officers, and non-gazetted civil officers drawing over R. 300 a month are included in Section II instead of in Section III, and that priests, medical practitioners, and "other professions" in which an average income of R. 30 or less a month is estimated, are included in Section III instead of in Section II. This is done for purposes of classification, and in the latter case also because professions in general have to be considered in relation to the income tax paid. If, however, these classes were transposed, it would not make any appreciable difference in the average incomes of the two sections.

II. SECTION I.—*Agriculture.*

Table II gives the result of a carefully prepared estimate of the cultivated area, the yield per acre, the total production, the average price, and the total value of the production in each of the two years 1875 and 1895, in British territory, excluding Upper Burma and Baluchistan, but including Berar. The various columns are explained as follows:—

(*a.*) *Area under Cultivation.*—The area under cultivation in 1895 is taken from the published agricultural returns, and may be accepted as a fair approximation of facts. The figures for 1875 are estimates carefully prepared for each description of crop, and are based on known facts and fair deductions.

Rice.—The cultivated area of this crop appears to have been first recorded by the Agricultural Department in 1884. The statistics, however, omitted the important province of Bengal, but the remaining provinces of British India give a cultivated area of 21 million acres in 1884, against 33 million in 1898, or an increase of 58 per cent. Bengal was first included in the statistics of 1890-91, and the total area of rice cultivation in all British India in acres in that and in the succeeding years was as follows:—64,271,000, 62,517,000, 64,704,000, 67,148,000, 67,927,000, 67,903,000, 65,128,000, 69,432,000, 73,281,000. This gives an increase of 9 million acres in eight years, equal to an average increase of 1,120,000 acres a year. Thus, if the increase during the previous years proceeded in the same ratio, and the figures given for British India, excluding Bengal, from 1884 indicate that this was probably the case, there must have been an increase of 22,400,000 acres in 1895 as compared with 1875. But I have taken a lower figure, and estimated the increase at 15,900,000 acres only, of which 1,500,000 was required for the additional export alone, see Table III. It should also be remembered that rice is chiefly grown in Bengal and Burma, and the opening up of railways has caused its increased consumption in other parts of India, and it has to some extent taken the place of other food grains. The estimate allows for an increase in Bengal from 1875 to 1895 of 3,900,000 acres only.

Wheat.—As regards wheat, the great increase in the export must necessarily have extended the area of cultivation; for example, the export in 1875 was 2½ million cwt., and this rose to 30 million cwt. in 1891-92, which necessitated an increased cultivated area of 5,150,000 acres. The export of 1895 fell to 10½ million cwt., requiring 1½ million acres in excess of 1875, and the increase in the wheat-eating population must also be considered, but the increase in the cultivation is estimated at 3 million acres only.

Other Grains.—In other grains a total increase of 3,300,000 acres, from 80,300,000 to 83,600,000, is only estimated. The statistics of 1884 give 71,434,000 as the cultivated area of British India, excluding Bengal; from statistics since 1890-91, the area in Bengal must have been under 10 million acres in 1884, and the total area in British India therefore approximated to 81,400,000. The estimate for 1875 is shown at only 1 million acres below this figure, and probably exceeds the actual. Of the estimated increase of 3,300,000 acres between 1875 and 1895, 400,000 was required for increased exports, and the balance shows an increase of 4 per cent. only, against an 18 per cent. increase in the population.

Cotton.—As regards the non-food crops, Table III shows that more cotton was exported than produced in both years; but the crop is largely cultivated in native States, and whereas exports from the cultivated produce of the whole of India are shown in Table III, the production of British India only is given in Table II. The increased area under cotton in Table II is fully accounted for by the increase in the exports, and the large number of cotton mills established between 1875 and 1895, and consequent increased supply of cotton goods to the population in India.

Jute.—Similarly the increase in jute cultivation is more than accounted for by the increase in the export, not only of the raw material and manufactured goods, but also by the heavy local requirements in India necessitated by the extensive movement of crops within the country, as well as exported. It seems probable that the area cultivated in 1875 was less than estimated.

Seeds.—The increase in the cultivated area in seeds is estimated at 2 million acres, of which one-half was required for increased exports. The increase was probably greater than estimated.

Opium.—Opium is separately shown in Table II, because though the cultivators are classed as agriculturists, they do not receive the full value of the crop, which is a Government monopoly. In 1875 the cultivator received R. 5, and in 1895 R. 6, for every seer taken to the Government factory. This value goes to the cultivator, and is therefore shown in the column of "Value "of Production." The full value of the tea, coffee, and indigo grown, similarly, does not go to the cultivators, nor do they receive a fixed price for the production. The growers are, therefore, classed as labourers, and not agriculturists, and the value of the production is not included in Table II, though the area cultivated is in the grand total of cultivation.

Results.—The result of the calculations made is that the total area under cultivation in 1895 is shown as 210,760,000, against 177,300,000 acres in 1875, an increase of 33,460,000 acres in all. Excluding tea, coffee, and indigo, the increase amounted to 32,400,000 acres. The increase of 44,800,000 cwt. in the exports of agricultural produce in 1895 as compared with 1875 required an additional cultivated area of about 6,660,000 acres; if we assume that 20 per cent. of this was provided by the native States (see Table III, line 8), the increased acreage available for the population amounted to 27 million only, or an increase of 15·4 per cent., against an increase of 18 per cent. in the population. This estimate cannot, therefore, be regarded as showing an excessive increase, especially if the extended civilisation, the advantages of irrigation, and other facilities offered, are considered.

(*b.*) *Yield per Acre.*—The "yield per acre" for the year 1895 is taken in each case from a series of averages of normal years for each crop concerned. The results of the first practical attempt to ascertain the "yield per acre" were published by the Agricultural Department in a return in 1892, but from statistics which have since been published it would seem that many of the figures given in the 1892 return were far from accurate. In preparing the estimate in Table II care has been taken to avoid any exaggeration in the yield, and the tendency has been to rather under than over estimate in each case.

The estimates of yield for 1875 are, of course, purely conjectural, but are based on the surrounding facts, and the tendency has been to rather over than under estimate them as compared with 1895. In considering the average yields of the two years on a comparative basis, two important points have to be considered. First, the improved methods of cultivation adopted during the twenty years, and secondly, irrigation. As regards the former, it is probable that for the greater proportion of the cultivation of India the methods adopted were practicaby the same in 1895 as they were in 1875, but at the same time it is well known that in many places improvements have taken place, such as manuring the ground, and sometimes giving it a rest, improved implements, picked seed for sowing, &c., and the results must necessarily have been some increase in the average all round yield, though not very great.

As regards the second consideration, irrigation may have the effect of increasing the yield in lands previously cropped, or it may assist in extending cultivation where it was not possible to grow crops before. The difference in the yield per acre of crops grown on irrigated and non-irrigated lands is well illustrated in the agricultural returns.

The following figures give the average of the five years ending 1896-97 of the yield in lbs. per acre in the Punjab and the North-Western Provinces, the best irrigated provinces in India, and in the Central Provinces and Bombay. Madras is the third most irrigated province, but no figures of comparative yield are published for it.

[Lbs. per Acre.]

Crop.	Punjab.		N.W.P. and Oudh.		Central Provinces.		Bombay.	
	Irrigated.	Non-Irrigated.	Irrigated.	Non-Irrigated	Irrigated.	Non-Irrigated.	Irrigated.	Non-Irrigated.
Rice........	1,167	266	1,018	619	1,200	711	—	1,230
Wheat....	917	576	980	803	925	570	1,250	510
Barley....	917	562	989	736	—	—	—	—
Jawar	595	374	—	—	—	—	1,550	670
Bajra	590	365	—	—	—	—	—	400
Maize	1,213	668	—	—	—	—	—	—
Gram	755	522	719	639	—	—	1,200	410
Sugar	1,652	962	2,239	—	—	—	6,950	—
Cotton....	100	57	169	128	—	—	—	—
Ragi........	—	—	—	—	—	—	1,400	1,060

The difficulty in coming to a conclusion, however, is to ascertain the actual area of cultivation brought under irrigation between 1875 and 1895.

Table IV gives the area in acres under irrigation in each year since 1884-85 in British India, excluding Upper Burmah. The classification in the first year is incorrect, and Bengal and Bombay are both omitted; from 1885-86 to 1897-98 the Bengal statistics were not available, and the classification of the sources of irrigation was imperfect, but the figures for the various years appear to have been worked out with sufficient consistency of method to enable a comparison to be made, though the probabilities are that the figures err on the side of under estimating the actual area affected.

In columns 8, 9, and 10 of the table, index numbers of the rainfall in India, in British India, and in the provinces in which almost the entire Government irrigation has been carried out respectively, are given. The figures in column 10 only need be considered here. From 1885-86 to 1890-91 the rainfall remained almost at the same figure, a little above normal, and we find that the total area irrigated slightly increased each year, except in

1888-89, when the increase was considerable. In 1891-92 there was a slight deficiency of rain, but, probably due to incorrect statistics, the area irrigated was less. In 1892-93 to 1894-95 the rainfall was well above normal, and the irrigated area decreased each year. In the next two years there was a marked deficiency of rain, and the increase in the irrigated area was equally marked. In 1897-98 the rainfall was normal, but irrigation extended. In 1898-99 the rainfall was nearly normal, and irrigation remained the same. In 1899-1900 the rainfall was probably the lowest ever recorded, and 40 per cent. in deficiency, and the area irrigated increased by 1 million acres. From these remarks it would seem that the statistics, so far as their general variations are concerned, may be accepted as an approximate indication of facts. Taking, therefore, the years 1885-86 and 1897-98, we find normal rainfall in both years, and the increase in the irrigated area to have been 6,688,179 acres, of which the increase by Government canals is shown to have been 4,659,399, though it is probable that it was considerably more. The Government expenditure on the construction of irrigation works (see Table V) in the ten years from 1875-76 to 1884-85 was R. 11,96,28,160, and in the twelve years from 1885-86 to 1896-97, R. 8,05,64,230. Thus the increased irrigated area between the years 1875 and 1895 works out to about 17,500,000 acres. Or, making the calculation in another way, the total construction expenditure up to the end of 1895 was 31 crores, of which 14 crores was expended before 1876. If, therefore, the irrigated area was as stated in the agricultural returns, the increase during the twenty years works out to nearly the same figure.

Looking back at the yield per acre on irrigated and on non-irrigated lands quoted from the agricultural returns given above, and omitting rice in the Punjab and Bombay entirely, the figures for which appear to be inaccurate and exaggerated, the average yield of the nine crops given was 849 lbs. per acre on irrigated, and 553 lbs. on non-irrigated land. Thus the 17,500,000 acres irrigated added during the twenty years may be estimated to have yielded in 1895 5,180 million lbs., equal to 46,250,000 cwt., more than the similar area of non-irrigated land would have yielded.

Looking at Table II again, the cultivated area in 1895 of 208,100,000 acres, multiplied by 724 lbs. per acre, the average yield of 1875, amounts to 1,345,218,000 cwt., but the actual production of the year is shown as 1,399,586,000, or 54,368,000 cwt. more. This difference is accounted for by 46 million cwt. due to irrigation, as shown above, and the balance to improved methods of cultivation, and by the probability of the returns excluding areas brought under irrigation that should have been included.

The increased yields have been introduced into Table II against the crops which have been most affected by irrigation, and the net result shows an average yield per acre of all crops of 753 lbs. in 1895, against 724 in 1875, an increase of 4 per cent. only, which, under all the circumstances of the case, can only be regarded as a very moderate estimate.

(*c.*) *Total Production.*—The estimates of area under cultivation and yield in Table II give a total production, so far as the Indian agriculturist is concerned, of 1,399,649,000 cwt. in 1895, against 1,135,058,000 in 1875. Of this 1,298,134,000 and 1,064,535,000 cwt. respectively represent the food crops. Referring to the table of exports, Table III, and population, Table I, and assuming that the native States provided 20 per cent. of the exports, the food supply works out as follows:—

	1875.	1895.
	Cwt.	Cwt.
Production	1,064,535,000	1,298,134,000
Deduct—		
Food exports less 20 per cent.	19,521,000	39,897,000
Balance	1,045,014,000	1,258,237,000
Divided by the population	188,000,000	222,000,000
Gives per head per annum	5·559	5·668

Thus we find that the food retained in India in 1875 amounted to 1·701 lbs. per diem per head of population, and in 1895 to 1·739 lbs. per diem per head.

(*d.*) *Average Price per Cwt.*—The average price of each crop has been carefully worked out from the various returns, &c., and may be accepted as approximately correct. Prices were 30 per cent. higher in 1895 than in 1875 for food crops, and 31 per cent. for all crops.

(*e.*) *Value of Production.*—The figures in Table II show that whereas the agriculturists in India obtained R. 3,41,62,51,450 in value for all their crops in 1875, they obtained R. 5,39,34,34,260 in 1895. Table I gives 118,400,000 as the agriculturist population in 1875, and 139,638,000 in 1895, consequently the agricultural income, without deductions, amounted to R. 28·8 per head in 1875, and R. 38·62 in 1895. This, however, does not represent the true comparative income, because taxation increased in the interval.

III.—*The Agricultural Income.*

We must now refer to Table VI, which gives the revenue and expenditure in India in 1875 and 1895. The official figures are for British India, and include Upper Burma in 1895, but as that province has been excluded from the estimates of production, the receipts that concern the present question are separately shown in the table. Berar is also omitted from the official figures, but has been included in the second set of figures in the table.

If we examine the revenue side of the statement, we find that the agriculturist's income is reduced by the payment of land revenue, salt, provincial rates, registration, and irrigation. The land revenue, though nominally paid by the landlord, for the most part comes out of the pockets of the tenants. The salt tax is mainly paid by the cultivators, though not entirely, possibly 80 per cent. of it. Similarly provincial rates and registration are mainly paid by them, and the entire irrigation revenue is received from them. It is proposed, therefore, to reduce the agricultural income by the whole of the land revenue and irrigation, 90 per cent. of registration, 80 per cent. of salt, and 70 per cent. of provincial rates. The other heads of revenue do not concern the agriculturists, though as a matter of fact they no doubt subscribe largely to excise and stamps, to some extent to railways, and to a small amount to customs; but these, with the exception of customs, must all be classed as luxuries, and cannot be included in the legitimate reduction of income. The proportion of customs paid by this class is probably so small that it may be omitted.

On this basis we arrive at the following figures :—

	1875.		1895.	
	R.	R	R.	R.
Value of production	—	3,41,62,51,450	—	5,39,34,34,260
Deduct—				
100 per cent. land revenue	22,21,14,530	—	26,12,53,190	—
100 ,, irrigation	57,50,380	—	2,29,27,840	—
90 ,, registration	17,05,180	—	38,95,720	—
80 ,, salt	4,99,64,440	—	7,08,72,580	—
70 ,, provincial rates	1,3,952,150	—	2,63,56,690	—
Total deduction...........	—	29,34,87,680	—	38,53,06,020
Balance remaining................	—	3,12,27,63,770	—	5,00,81,28,240
Agricultural population	118,400,000	—	139,638,000	—
Income per head	—	26·4	—	35·9

Thus we find that the agricultural income of British India *increased from* R. 26·4 *per head in* 1875 *to* R. 35·9 *per head in* 1895, *an increase of* 39·8 *per cent.*

IV. SECTION II —*Non-Agriculture.*

The classes and number classified under this head are shown under Section II in Table I, and each class will be separately considered.

Attention is first invited to Table VII, a table of average wages under the heads given, in each province in 1875 and 1895. Columns 3, 4, 5, 6, 7, and 8 are taken from the official statistics, and columns 9, 10, 11, and 12 are worked out from the civil estimates.

Column 10, Government officials drawing over R. 300 a month, includes all officers drawing that pay, who do not hold a gazetted appointment in any recognised department. It includes the higher paid revenue and judicial services, such as deputy collectors, extra assistant commissioners, subordinate judges and higher law officers, but excludes judges of the high and chief courts, which appear in the next section.

Column 11, Government officials drawing R. 300, and under, a month, contains clerks, which account for upwards of 50 per cent., hospital assistants, moonshees, preventive officers, tahsildars, forest rangers, and all who may be classed as belonging to the educated class, with a monthly pay ranging from R. 10 to R. 300 a month.

Column 12 includes office servants, peons, native jailors and warders, pressmen, &c. The estimates for 1875 lump together clerks and servants in a number of the lower paid establishments, which have consequently been omitted from the calculation. The increase in the average in 1895, as compared with 1875, in both columns 11 and 12, is therefore probably in excess of that shown, but may be accepted as sufficiently approximate for the purposes of this paper.

This table has an important bearing on the estimates of income given in this section. In columns 3 to 8 the average in each province is multiplied by its population, and the whole totalled and divided by the total population, thus arriving at the general average. In columns 9 to 12 the average is arrived at by the actual number employed in each province, so far as can be ascertained from the civil estimates of each year.

V.—*Labourers.*

Under this head is included well-sinkers, tank-diggers, road, canal, and railway labourers, quarrymen, miners, tea, coffee, and indigo garden workers, and all general labour. The average pay earned is fairly represented by column 3 in Table VII, Agricultural Labourer, and gives the following results :—

	1875.	1895.
Male adult labourers	5,009,000	5,734,000
Average wage per annum .... R.	62·88	72·60
Total wages .... R.	31,49,65,920	41,62,88,400

Domestic.

Domestic servants are chiefly massed at the various large towns throughout India, and there appears to be no official record of the average wages received by them at different times, with the exception of grooms and horsekeepers. It is, however, well known that these wages have increased during the past twenty-five years very considerably, and the rates given in the statement below do not over-estimate the difference. The rates for grooms and horsekeepers have been taken from the official tables.

Class.	1875.			1895.		
	Number. Male Adults.	Rate per Mensem.	Amount.	Number. Male Adults.	Rate per Mensem	Amount.
		R.	R.		R.	R.
1. Barbers	410,000	8	32,80,000	500,000	10	50,00,000
2. Dhobies	410,000	9	36,90,000	500,000	12	60,00,000
3. Bheesties	200,000	6	12,00,000	250,000	7	17,50,000
4. Cooks	87,000	11	9,57,000	110,000	15	16,50,000
5. Bearers and khitmadgars	520,000	8	41,60,000	600,000	10	60,00,000
6. Grooms and horsekeepers	80,000	6	4,80,000	110,000	7	7,70,000
7. Durwans	30,000	7	2,10,000	41,000	8	3,28,000
8. Sweepers	420,000	6	25,20,000	500,000	8	40,00,000
Total	2,157,000	—	1,64,97,000	2,611,000	—	2,54,98,000
Per annum	—	—	19,79,64,000	—	—	30,59,76,000

VI.—*Industrial.*

This head may be divided into the following ten classes, with a male adult population in each year as noted:—

Class.	1875.	1895.
(1.) Provision of cattle and animal food	1,520,000	1,730,000
(2.) Food and drink, other than agriculture	1,210,000	1,400,000
(3.) Lighting, fuel, and forage	740,000	870,000
(4.) Building	280,000	333,000
(5.) Textile fabrics	2,490,000	2,883,000
(6.) Metals and precious stones	745,000	870,000
(7.) Glass and earthenware	446,000	501,000
(8.) Wood, cane, and matting	873,000	996,000
(9.) Leather, horns, and bones	575,000	666,000
(10.) Miscellaneous	370,000	435,000
Total	9,249,000	10,684,000

(1.) *Provision and Care of Cattle and Animal Food.*—This may be subdivided as follows:—

Class.	1875.	1895.
(*a.*) Cattle breeders	178,000	202,000
(*b.*) " breeder employés	470,000	535,000
(*c.*) " keepers and sellers	186,000	211,000
(*d.*) Butchers	54,000	61,000
(*e.*) Ghee dealers	22,000	25,000
(*f.*) Fowl and egg dealers	6,000	7,000
(*g.*) Fishermen and dealers	604,000	689,000
Total	1,520,000	1,730,000

Table VIII gives an estimate of live stock in India in 1875 and 1895 prepared from the official returns. The same percentage of increase is allowed for the years 1875-85, for which there are no returns, as for 1885-95, and as figures for Bengal are altogether omitted, the figures for the North-Western Provinces and Oudh have been entered for it. The values given are taken from the best sources available. The result gives a total stock value of 180 crores in 1875, and 335 crores in 1895. If we allow the small net profit of 5 per cent. per annum on the capital, the cattle breeder's average income for the year amounted to R. 528 in 1875, and R. 829 in 1895.

The wages of the employés may be taken as the same as that of the agricultural labourer, which gives a total income in 1875 of R. 2,95,53,600, and R. 3,88,41,000 in 1895. As regards the remaining five classes under this sub-head, there is no information available which can be relied on, but it is well known that fowls and eggs and fish rose considerably in price during the period. Fishermen and fishdealers numbered 689,000 adult males in 1895, and the greater number of these were probably congregated in the vicinity of the large towns, on the sea coast, and on river banks, where the price of fish doubled and trebled between 1875 and 1895. It is proposed, therefore, to take the average income of unskilled labour given in column 4 of Table VII as the income of these classes. This gives the total income of the five classes as R. 7,03,18,080 in 1875, and R. 9,52,08,840 in 1895.

The aggregate income under this sub-head consequently may be estimated as follows:—

	1875.	1895.
	R.	R.
Cattle breeders	9,40,30,000	16,74,95,000
Employés	2,95,53,600	3,88,41,000
Remainder	7,03,18,080	9,52,08,840
Total	19,39,01,680	30,15,44,840

(2.) *Food and Drink, other than Agriculture.*—The subdivision is as follows:—

	1875.	1895.
(*a.*) Bakers, and sweetmeat makers and sellers	156,000	181,000
(*b.*) Country spirit distillers and sellers	212,000	245,000
(*c.*) Sugar makers and dealers	68,000	78,000
(*d.*) Salt preparers and dealers	53,000	60,000
(*e.*) Grocers and condiment dealers	698,000	812,000
(*f.*) Others	20,000	24,000
Total	1,210,000	1,400,000

Here again we are without any precise guide to the income received. Bakers, distillers, and manufacturers might be classed as skilled labour, and dealers unskilled labour, though belonging to a class considerably above the ordinary non-skilled class, and expecting a larger income. I propose, therefore, to allot to the six sub-heads a monthly income of R. 11·32 in 1875, and 13·81 in 1895, equivalent to half the aggregate of columns 4 and 7, skilled and unskilled labour, in Table VII. This accounts for R. 16,43,66,400 in 1875, and R. 23,20,08,000 in 1895.

(3.) *Lighting, Fuel, and Forage.*—The subdivision as follows:—

	1875.	1895.
(*a.*) Oil pressers and dealers	452,000	531,000
(*b.*) Fuel collectors and sellers	230,000	270,000
(*c.*) Fuel preparers	38,000	45,000
(*d.*) Others	20,000	24,000
Total	740,000	870,000

The oil pressers and dealers may be classed as between the skilled and non-skilled classes, shown in columns 4 and 7 of Table VII, whilst (*b*) (*c*) and (*d*) may be treated as earning the same income as the agricultural labourer under column 3. The income under this head accordingly amounted to R. 7,95,09,120 in 1875, and R. 11,26,08,720 in 1895.

(4.) *Building.*—The bulk of this section consists of masons, builders, and stone and marble workers, and the income may be divided as follows:—

	1875.	1895.
Masons (column 8, Table VII)	228,000	276,000
Non-skilled labour	52,000	57,000
Total	280,000	333,000

This gives an income of R. 3,83,93,280 in 1875, and R. 5,27,27,400 in 1895.

(5.) *Textile Fabrics.*—This head may be subdivided as follows:—

	1875.	1895.
(*a.*) Wool	80,000	84,000
(*b.*) Silk	70,000	85,000
(*c.*) Cotton	1,750,000	2,014,000
(*d.*) Jute	100,000	111,000
(*e.*) Dress..	490,000	559,000
Total	2,490,000	2,883,000

These may be classed as follows:—

	1875.	1895.
(*a.*) Weavers, spinners, and manufacturers	1,950,000	2,270,000
(*b.*) Tailors	325,000	370,000
(*c.*) Dealers	215,000	243,000
Total	2,490,000	2,883,000

Columns 4 and 7 in Table VII, against Bombay, show the average wages drawn for unskilled and skilled labour in a cotton mill in Bombay, and may be accepted as fairly typical of the income derived by the class generally.

The proportion of skilled to unskilled labour is however so small, that the figures for the whole will not be seriously affected by the omission of the former. It is proposed, therefore, to take R. 7·5 and R. 8·5 per month for 1875 and 1895 respectively.

As regards tailors, the official statistics give no figures, but in the towns in India the pay of Derzies, on an average, increased probably as much as 50 per cent. during the period. It is not proposed, however, to make so great a difference, and an all round average of R. 7 and R. 9 per month is probably sufficiently near the mark.

Dealers are for all kinds of textile fabrics and apparel, but the majority are for piece goods. Taking the production of raw cotton and jute in India, deducting the export, and converting the balance into manufactured goods, from which deducting the export of manufactures, and to which adding the import, the result works out approximately to cotton, jute, silk, and woollen goods and apparel to the value of 28 crores retained in the country in 1875, and 48 crores in 1895. This for all India represents about one rupee a head in 1875, and 25 annas a head in 1895. The great bulk of this apparel passes through the hands of the brokers and dealers, and if an estimate of an all round profit of 10 per cent. in all is taken, the income in 1875 amounted to R. 2,80,00,000, and R. 4,80,00,000 in 1895, representing an average annual income to each of R. 130 in 1875, and R. 198 in 1895.

Thus the income under this sub-head is estimated as follows:—

	1875.	1895.
	R.	R.
(*a.*) Weavers, spinners, and manufacturers	17,55,00,000	23,15,40,000
(*b.*) Tailors	2,73,00,000	3,99 60,000
(*c.*) Dealers	2,80,00,000	4,80,00,000
Total	23,08,00,000	31,95,00,000

(6.) *Metals and Precious Stones.*—The great majority of this class consist of gold and silver assayers and workers, and probably represent the wealthiest working class in India. The labour is of a highly skilled character, and is well paid, and the income derived is probably in excess of ordinary skilled labour, as shown in column 7 of Table VII. It is proposed, however, to adopt the figures given for skilled labour, which give an aggregate income of R. 14,24,14,200 in 1875, and R. 20,49,37,200 in 1895.

(7.) *Glass and Earthenware.*—The great majority of this class consist of potters, and clay image and pipe bowl makers and sellers, and the work is not of a skilled nature, though of higher class than ordinary labour. It is, however, proposed to adopt the income of the agricultural labourer for the entire class. This gives an aggregate of R. 2,80,44,480 in 1875, and R. 3,63,72,600 in 1895.

(8.) *Wood, Cane, and Matting.*—The bulk of this class consists of carpenters, basket weavers, and mat makers. Roughly, one-half consist of carpenters and dealers, and may be classed under column 8 of Table VII, whilst the other half may be classed under unskilled labour, column 4. This gives an aggregate income of R. 10,06,39,680 in 1875, and R. 13,30,25,760 in 1895.

(9.) *Leather, Horns, and Bones.*—This class mainly consists of tanners and boot and shoe makers, and is not highly paid. The official statistics give the wages of tanners, workmen at the Harness Factory, Cawnpur, at R. 7 and R. 9 in 1879, and R. 10 and R. 12 in 1895, whilst the tanners in the Army Boot Factory only received R. 4·5 in 1886, and R. 5·17 in 1895. The saddlers in the latter factory received R. 7 in 1886, and R. 13 in 1895. It is proposed to adopt the income for unskilled labour given in column 4 of Table VII for the entire class. This gives an aggregate income of R. 4,63,68,000 in 1875, and R. 6,38,56,080 in 1895.

(10.) *Miscellaneous.*—This heading includes the classes connected with paper and printing, watches, engraving, toy making, necklace and armlet making, tools, machinery, arms, saltpetre and soap workers, &c. Of the total about one-tenth may be classed as skilled labour, and classed under column 7 of Table VII, and the remainder as unskilled under column 4. This gives an income of R. 3,39,26,040 in 1875, and R. 4,77,83,880 in 1895.

Summary of Industrial.

We are now in a position to summarise the annual income in each year under the head *Industrial.*

Class.	Annnul Income.	
	1875.	1895.
	R.	R.
(1.) Provision of cattle and animal food	19,39,01,680	30,15,44,840
(2.) Food and drink, other than agriculture	16,43,66,400	23,20,08,000
(3.) Lighting, fuel, and forage	7,95,09,120	11,26,08,720
(4.) Building	3,83,93,280	5,27,27,400
(5.) Textile fabrics	23,08,00,000	31,95,00,000
(6.) Metals, and precious stones	14,24,14,200	20,49,37,200
(7.) Glass, and earthenware	2,80,44,480	3,63,72,600
(8.) Wood, cane, and matting	10,06,39,680	13,30,25,760
(9.) Leather, horns, and bones	4,63,68,000	6,38,56,080
(10.) Miscellaneous	3,39,26,040	4,77,83,880
Total	105,83,62,880	150,43,64,480

VII.—*Military, excluding Officers.*

The estimate is made as follows:—

Class.	1875.			1895.		
	Number.	Rate per Mensem.	Amount.	Number.	Rate per Mensem.	Amount.
		R.	R.		R.	R.
1. Native commissioned officer..	3,000	75	2,25,000	3,400	75	2,55,000
2. European non-commissioned officer	5,800	67	3,88,600	6,000	83	4,98,000
3. Native non-commissioned officer	12,700	13	1,65,100	13,000	13	1,69,000
4. European soldier	64,500	24	15,48,000	66,500	31	20,61,500
5. Native soldier	134,000	6·6	8,84,400	141,000	7·6	10,71,600
6. Artificer and follower	14,000	—	1,30,000	16,100	—	1,80,000
Total	234,000	—	33,41,100	246,000	—	42,35,100
Per annum ...	—	—	4,00,93,200	—	—	5,08,21,200

The increase in the British soldier's pay is due to the fall in the gold value of the rupee.

VIII.—*Civil Administration, excluding Departmental Officers.*

The figures for this head are worked out from actual computation of the pay allotted in the Civil Estimates for 1875 and 1895. The average monthly earnings of the first four classes given below are shown in columns 9 to 12 of Table VII. As regards village accountants, the figures for 1895 work up to an average of R. 5·7 a month; the figures for 1875 are incomplete, but an increase in pay was made in some of the provinces in 1882. The figures for village watchmen are incomplete for both years, but from such information as is available it would seem that the pay was approximately the same. The wage of both these classes is low, but the men ordinarily have other means of livelihood; for instance, the village accountant is sometimes the village scribe also. The estimate accordingly works out as follows:—

Class.	1875.			1895.		
	Number.	Rate per Mensem.	Amount.	Number.	Rate per Mensem.	Amount.
		R.	R.		R.	R.
1. Officials on salary exceeding R. 300 a month	1,800	46·6	8,38,800	2,400	535	12,84,000
2. Officials on salary of R. 300 a month and under	98,200	36·7	36,03,940	125,600	39·9	50,11,440
3. Illiterate class	190,000	6·8	12,92,000	220,000	7·4	16,28,000
4. Police, all ranks, below gazetted officers	134,000	10·6	14,20,400	158,000	12·2	19,27,600
5. Village accountants	170,000	5·0	8,50,000	145,000	5·7	82,65,000
6. „ watchmen	424,000	3·0	12,72,000	503,000	3·0	15,09,000
Total	1,018,000	—	92,77,140	1,154,000	—	1,21,86,540
Per annum	—	—	11,13,25,680	—	—	14,62,38,480

IX.—*Commerce.*

Under commerce in this section is only included what may be termed the poorer portion. Bankers, money lenders, merchants, brokers, and shopkeepers are included in Section III, though possibly many of these may be on small incomes. Under the present head are included:—

	1875.	1895.
Clerks	106,000	134,000
Money changers	16,000	20,000
Hawkers	26,000	34,000
Servants	41,000	52,000
Total	189,000	240,000

From the rates of wages given to Government clerks and servants, and allowing for the lower rates ordinarily given in commercial houses, it is proposed to estimate R. 30 and R. 33 per month for 1875 and 1895 respectively for clerks, and R. 6 and R. 7 for servants.

Money changers and hawkers, the former of which often drive a profitable trade, may together be classed as receiving the same income as unskilled labour, column 4 of Table VII. The result gives an aggregate income of R. 4,44,98,880 in 1875, and R. 6,26,09,520 in 1895.

X.—*Transport.*

This head may be subdivided as follows:—

Class.	1875.	1895.
(1.) Clerks	10,000	15,000
(2.) Station masters, inspectors, &c.	3,000	9,000
(3.) Post masters and clerks	6,000	10,000
(4.) Telegraph masters and clerks	4,000	6,000
(5.) Guards, drivers, &c.	2,000	5,000
(6.) Postal runners and messengers	60,000	86,000
(7.) Railway porters, &c.	60,000	124,000
(8.) Dock employés	3,000	4,000
(9.) Lascars, &c.	17,000	26,000
(10.) Cart owners and drivers	268,000	290,000
(11.) Palkee bearers	80,000	82,000
(12.) Pack animal drivers, &c.	82,000	107,000
(13.) Stable employés	15,000	21,000
(14.) Bargemen	145,000	197,000
(15.) Signallers, &c.	28,000	51,000
Total	783,000	1,036,000

Nos. (1) to (5) may be lumped together on an average monthly income of R. 40 in 1875, and R. 45 in 1895.

No. (6) postal runners and messengers is given in column 6 of Table VII.

Nos. (7), (8), (10), (11), (12), (13), (14) may be classed together as individually earning the same income as an agricultural labourer, column 3, Table VII.

No. (9) lascars apparently received the same pay in both years.

No. (15) signallers may be regarded as skilled labour, and allotted the income of column 7 of Table VII.

This head accordingly works out to an aggregate income of R. 6,32,20,320 in 1875, and R. 10,68,54,600 in 1895.

XI.—*Miscellaneous.*

This head is classified as follows :—

	1875.	1895.
(1.) Mendicants	852,000	932,000
(2.) Religious employés	55,000	62,000
(3.) Educational teachers and clerks	120,000	139,000
(4.) Clerks (not otherwise specified)	78,000	90,000
(5.) Lawyers' clerks	16,000	19,000
(6.) Engineers, draughtsmen, clerks, &c.	16,000	21,000
(7.) Hospital compounders	14,000	18,000
(8.) Mukteears	13,000	16,000
(9.) Bandsmen	103,000	118,000
(10.) Acrobats, conjurers, &c.	23,000	26,000
(11.) Actors and singers	44,000	53,000
(12.) Pensioners	78,000	90,000
(13.) Unspecified	156,000	178,000
Total	1,568,000	1,812,000

For the purposes of income these may be classified as follows:— Nos. (3), (4), (5), and (6) as clerks. Nos. (7) and (8) as skilled labour, column 7, Table VII. Nos. (1), (2), (9), (10), (11), and (13) as receiving the income of an agricultural labourer, column 3, Table VII, and pensioners. The pay of the clerks under this heading is probably, on the average, lower than that of Government clerks, and R. 30 and R. 32 per month in 1875 and 1895 respectively may be taken as a fair average. The amount received by pensioners, taken from the accounts, was R. 79,99,150 and R. 96,91,460 in the two years respectively. Thus the aggregate income under this head is estimated at R. 17,34,91,510 in 1875, and R. 22,40,15,900 in 1895.

XII.—*Summary—Non-Agriculture.*

The following gives the population, and the summary of the annual income of the non-agricultural class, excluding those whose incomes place them, or should place them, above the fear of poverty.

Head.	1875.		1895.	
	Population.	Income.	Population.	Income.
		R.		R.
Labourers	16,310,000	31,49,65,920	18,870,000	41,62,88,400
Domestic	7,011,000	19,79,64,000	8,626,000	30,59,76,000
Industrial	29,805,000	105,83,62,880	35,180,000	150,43,64,480
Military	414,000	4,00,93,200	450,000	5,08,21,200
Administration ...	3,123,000	11,13,25,680	3,779,000	14,62,38,480
Commerce	611,000	4,44,98,880	748,000	6,26,09,520
Transport	2,588,000	6,32,20,320	3,253,000	10,68,54,600
Miscellaneous.......	5,198,000	17,34,91,510	6,028,000	22,40,15,900
Total	65,060,000	200,39,22,390	76,934,000	281,71,68,580
Average per head	—	30·8	—	36·6
Increase =	—	—	—	19·0 per cent.

It will be noticed that in estimating the incomes in this section, it has been assumed that every adult male of 15 and above has been treated as continuously employed, and receiving the estimated wage throughout the year. It is obvious that this could not possibly have been the case, but on the other hand a large number of women and children are altogether excluded from the estimates of income, who actually earned it. For example, female sweepers and Methrani ayahs are numerous; baking and sweetmeat making is largely done by women; women are employed in the various factories, and in many villages cotton and woollen goods are manufactured by them; the census of 1891 shows 74,000 midwives, and

150,000 leading a disreputable life, in addition to a large number of Nautch girls. After taking these facts into consideration it seems probable that a reduction of 5 per cent. from the adult males would be a sufficient allowance for non-employment, and this leaves an income of R. 1,90,37,26,261 in 1875, and R. 2,67,63,10,151 in 1895.

The Non-Agricultural Income.—In estimating the non-agricultural income from the figures given above, must be deducted the taxation, but taxation on necessaries, and not on luxuries, should only be considered. These are registration, salt, provincial rates, customs (imports only), and assessed taxes. A proportion of 90 per cent. of the registration, 80 per cent. of the salt, and 70 per cent. of the provincial rates revenues have already been taken to reduce the agricultural income, and it is proposed to reduce the non-agricultural by the balance of 10 per cent., 20 per cent., and 30 per cent. respectively, though some portion is paid by Section III. As regards customs, the revenue in 1875, excluding export duty and import duty on luxuries, amounted to R. 1,65,57,000, and in 1895 to R. 2,79,20,000, and it may be estimated that the non-agricultural class in Section II paid about 80 per cent. in each year. Income tax is only leviable on incomes of over R. 500 a year, but a number under this section come under its operation, including all clerks and military drawing upward of R. 41 a month. The figure given in the statement that follows is the result of actuarial calculations. Summarising the section we arrive at the following result:—

Details.	1875.		1895.	
	R.	R.	R.	R.
Non-agricultural income	—	1,90,37,26,261	—	2,67,63,10,161
Deduct—				
10 per cent. registration ..	1,89,490	—	4,32,860	—
20 " salt	1,24,91,110	—	1,77,23,690	—
30 " provincial rates	59,83,780	—	1,12,95,730	—
80 " customs	1,32,45,600	—	2,23,36,000	—
Income tax...........................	—	—	36,94,000	—
Total deductions	—	3,19,09,98	—	5,54,82,280
Balance	—	1,87,18,16,281	—	2,62,09,27,871
Non-agricultural population	65,060,000	—	76,934,000	—
Income per head	—	28·8	—	34·1

Thus it may be estimated that the non-agricultural income (Section II) *increased from* R. 28·8 *per head in* 1875 *to* R. 34·1 *per head in* 1895, *an increase of* 18·4 per cent.

XIII.—*Sections* I *and* II.

Sections I and II contain 97·6 per cent. of the entire population of British India, and the average annual income works out as follows:—

	1875.	1895.
Agriculture	3,12,91,06,420	5,01,46,97,470
Non-agriculture..	1,87,18,16,281	2,62,09,27,871
Total	5,00,09,22,701	7,63,56,25,341
Divided by population	183,460,000	216,572,000
Average annual income	27·3	35·2
Increase =	—	28·9 per cent.

XIV. SECTION III.—*Classes of Sufficient or Ample Means.*

Of the six classes in this section, the salaries of the civil and military officers can alone be ascertained with accuracy, but a very approximate indication of the income of the other classes is to be obtained from the income tax figures. This tax in its present form was established from 1886-87 only, and there is consequently no similar guide to the incomes earned in 1875; the increase from 1875-85 has therefore been estimated at the same ratio as from 1886-96.

The gross income tax collected in 1886 and 1896 was R. 136,91,800 and R. 1,85,58,160 respectively, of which R. 49,85,750 and R. 64,78,310 represented collections at 4 pies to the rupee, and R. 87,06,050 and R. 1,20,79,850 at 5 pies to the rupee. The income assessed in 1886 was therefore R. 57,16,28,230, and in 1896 R. 77,48,25,120, an increase of 35·5 per cent., or say 3·5 per cent. a year.

On this basis the annual income in 1875 amounted to 43 crores of rupees, and in 1895 to 76½ crores. Incomes above R. 2,000 a year approximately represented 65 per cent. of those taxed, those between R. 500 and R. 2,000 accounting for the balance of 35 per cent.

It is proposed now to inquire into each class of occupation to test the accuracy of the 1895 figures as far as it is possible to do so.

XV.—*Professions.*

The distribution is as follows:—

	1875.	1895.
(1.) Priests, ministers, &c.	378,000	452,000
(2.) Barristers, solicitors, &c.	19,000	24,000
(3.) Medical practitioners	88,000	108,000
(4.) Engineers	2,000	3,000
(5.) Astrologers	35,000	43,000
(6.) Painters, sculptors, &c.	7,000	9,000
Total	529,000	639,000

(1.) *Priests.*—The income tax figures show an assessment under religion in 1895 on an income of R. 33,04,800, on the basis of every income taxed being under R. 2,000 a year. If all priests &c., paid income tax, this would indicate an average income of R. 7·3, but the income of the great majority was nominally under R. 500, and they were not therefore required to pay the tax. The assessment, however, shows, assuming that R. 500 was the maximum income of any priest, that only 6,610 out of 452,000 were taxed. After a consideration of the various sources of revenue derived by this class, an all round average of R. 200 a year would probably not be too high an estimate, and this would give an aggregate income for the year of R. 9,04,00,000.

(2.) *Barristers, Solicitors, &c.*—The income drawn by this class in 1895, according to the assessment, 65 per cent. at 5 pies to the rupee, and 35 per cent. at 4 pies, amounted to R. 2,21,55,270, equivalent to an average annual income of R. 923 a head, or R. 75 a month. This is obviously a low average, and as there must have been many who did not pay the tax, it is proposed to raise the average to R. 300 a month, which gives a total income of R. 8,64,00,000. The Government revenue from stamps in 1895 amounted to R. 4,72,70,550, the incomes earned by barristers and solicitors were therefore probably considerably higher than the estimate suggested.

(3.) *Medical Practitioners.*—The income tax levied in 1895, 65 per cent. at 5 pies, and 35 per cent. at 4 pies to the rupee, represented an income of R. 34,23,408. A large number of this class, however, receive less than R. 500 a year, but even allowing for that the assessment appears low. If only 1 per cent., *i.e.*, 1,080, paid the tax at 4 pies the rupee, the income of those paying would have amounted to R. 3,648 a year only, and assuming R. 500 to be the maximum income of any individual for the year, the number paying the tax was only 7,870 out of 108,000. The actual income was probably, on an average, not less than R. 30 a month, which gives an aggregate of R. 3,88,80,000, and was probably higher.

(4.) (5.) (6.). *Other Professions.*—The other professions numbered 55,000, and yielded income tax to the value of R. 1,12,270 in 1895. This, taking 65 per cent. at 5 pies, and 35 per cent. at 4 pies for the rupee, gives an income of R. 43,04,400, and assuming that R. 500 was the maximum income of any individual, the tax was paid by 8,609 only. The professions included under this head are not, however, remunerative ones, and the majority consist of astrologers. It is possible that an average of R. 20 a month, equal to R. 240 a year all round, might be a sufficiently high estimate, and this gives an aggregate income of R. 1,32,00,000.

Summary of Professions, 1895.

	R.
(1.) Priests	9,04,00,000
(2.) Barristers, solicitors, &c.	8,64,00,000
(3.) Medicine	3,88,80,000
(4), (5), (6.) Other professions	1,32,00,000
Total	22,88,80,000

XVI.—*Commerce.*

This is subdivided as follows:—

	1875.	1895.
(1.) Bankers	64,000	85,000
(2.) Money lenders	114,000	141,000
(3.) Merchants	135,000	170,000
(4.) Brokers and contractors	67,000	87,000
(5.) Shopkeepers	216,000	271,000
Total	596,000	754,000

(1.) *Bankers.*—The bankers provided R. 4,33,080 as income tax in 1895, representing at 5 pies in the rupee an income of R. 1,66,30,272, equal to R. 196 a head for the year. If no banker paid the tax on more than an income of R. 500 for the year, the number paying amounted to 33,260 out of 85,000 bankers. The inference is that the members of this class, which is probably one of the wealthiest in India, did not pay their full dues, and it would probably be within the mark to adopt R. 1,200 for the year as an average, or six times the amount on which the tax was paid. The next paragraph shows that money lenders actually paid the tax on an average of R. 861 a year; it is proposed, therefore, to adopt the average of R. 1,000 for bankers, which gives an income of R. 8,50,00,000 for the year.

(2.) *Money Lenders.*—There is ordinarily practically little or no distinction between bankers and money lenders, but as they are shown separately in the Census Report and in the Income-tax Returns, they are treated with separately here also. The tax levied from this class in 1895 amounted to R. 31,61,490, equivalent at 5 pies to the rupee to an income of R. 12,14,01,216, representing an average income for the year of R. 861 per head. It is very improbable that this class paid their full dues, but, for the purposes of this paper, the figure given may be accepted.

(3.) *Merchants.*—Merchants paid R. 24,08,010 as income tax in 1895, representing an income of R. 8,76,67,584, equal to an average income for the year of R. 519. The export and import trade of India, as well as the inland trade, passes through the hands of the various merchants; the former amounted to 187 crores in 1895, and the latter to a probable minimum figure of 120 crores, or say 300 crores in all, and if we assume that a profit of only 4 per cent. was derived, the income from this agency alone, without any of other numerous other sources, such as the management of companies, &c., would have been 12 crores, equal to an average of R. 706 per annum per head, and this figure it is proposed to adopt.

(4.) *Brokers and Contractors.*—This class together subscribed R. 3,98,780 in 1895, representing an income of R. 1,53,13,152, equal to an average income per head of R. 176. It will probably be below the actual if we adopt an average of R. 500, which gives an aggregate income of R. 4,35,00,000.

(5.) *Shopkeepers.*—Shopkeepers contributed R. 17,09,510 to the income tax in 1895, representing, at 65 per cent. at 5 pies, and 35 per cent. at 4 pies to the rupee, an income of R. 7,13,89,104, equal to an average per head of R. 263. It is probable that the average income more than doubled this figure, and it is proposed, therefore, to take 15 crores as the income.

Summary of Commerce.

	1895. R.
(1.) Bankers	8,50,00,000
(2.) Money lenders	12,20,00,000
(3.) Merchants	12,00,00,000
(4.) Brokers and contractors	4,35,00,000
(5.) Shopkeepers	15,00,00,000
Total	52,05,00,000

XVII.—*Civil and Military Officers.*

These may be divided as follows:—

Class.	Number.	Average pay per Mensem.	Total for Year.
		R.	R.
Covenanted civil	880	1,570	1,65.79,200
Uncovenanted	1,870	660	1,48,10,400
Staff corps	1,950	880	2,05,92,000
Army British service	1,950	660	1,54,44,000
Marine	90	500	5.40,000
Gazetted officials (not included above)	60	—	13,40,000
Total	6,800	—	6,93,05,600

These figures are taken from actuarial calculations of officers on duty and pay drawn on 1st January, 1900. The exchange compensation allowance granted during 1895 averaged about 18 per cent., and may be estimated to have been paid on 6½ crores, representing R. 1,17,00,000 in all, thus raising the income under this head to R. 8,10,05,600, which paid income tax of nearly 21 lakhs.

XVIII.—*Estate Agents, Railway, Factory, and other Officers.*

The Income-tax Returns for 1895 show a payment of R. 9,71,900 by those included in this class, representing an income of R. 3,73,20,960, equivalent to R. 217 per head. This is, of course, too low a figure, but it is possible that the managers, &c., included here were included under other heads. The actual average income of this class may be taken at a minimum of R. 100 a month, equal to an aggregate income of R. 20,64,00,000.

XIX.—*Independent.*

Under this head is included the private income of those who have already been dealt with, and on this point we can only be guided by the income-tax revenue. This, of course, excludes a large value of private incomes, because, in the first place, incomes are probably in very many cases not assessed at their full value; in the second place, a number of private incomes that should be assessed are probably not assessed, and, lastly, the enormous income derived by land owners of large properties is not assessed, as it is exempt by law.

Taking the Income-tax Returns for 1895, we find the following figures:—

	R.
House proprietors and taxable estate holders	7,36,630
Profits of companies	11,44,670
Interest on securities	9,11,080
Total	27,92,380

This gives an income for the year amounting to R. 10,72,27,392, which is a low figure compared to the wealth of India. The income represents a 4 per cent. interest on a capital of R. 268,06,84,800.

If we assume that the landlord received 10 per cent. on the gross profit of the land, the revenue so derived amounted to 53 crores. As, however, the entire production from which the landlord obtains his wealth has been included in Section I, the rents received by him are excluded from this section, though strictly speaking it should be regarded as a separate item, in the same way as the income derived by the merchant, and the wages of his domestic servants are both separately treated.

XX.—*Summary of Section III.*

Summarising the incomes in this section received in 1895 the following is the result:—

	R.
Professions	22,88,80,000
Commerce	52,05,00,000
Civil and military officers	8,10,00,000
Agents, managers, &c.	20,64,00,000
Private incomes	10,72,20,000
Total	114,40,00,000

It seems probable that at least two-thirds of this section, probably more, should have paid income tax, in which case over 2 crores would have been realised, instead of R. 1,45,00,000 actually paid, and the figures given of the incomes derived are probably lower than the actual.

Referring back to the opening paragraph of this section, it was shown that on the basis of the income-tax revenue between the years 1885 and 1896, the annual income on which the tax was paid rose from 43 crores of rupees in 1875 to 76½ in 1895. But the summary given above puts down the income under this section at 114½ crores in the latter year; consequently on the same basis it may be estimated to have been 64½ crores in 1875. It may, however, be accepted that some portion of the increase in the tax was due to a more rigid levy, and that a greater proportion of assessable incomes was not taxed in 1886 than in 1896; it is, therefore, proposed to raise the income of 64½ crores in 1875 to 74 crores.

To these figures should be added the interest paid on deposits in the savings banks, which do not ordinarily pay income tax. The amount paid in 1875 was R. 7,11,000, and in 1895 R. 31,62,000.

From the result thus arrived at should be deducted the taxes paid, 20 per cent. customs, and the balance of the assessed taxes not accounted for in Section II making 56 lakhs in 1875, and 147 lakhs in 1895.

Thus the income under this section may be estimated at R. 74,04,00,000 in 1875, and R. 113,33,00,000 in 1895.

XXI.—*Summary of Sections I, II, III.*

Summarising all three sections, we arrived at the following figures:—

Section.	1875.	1895.
	R.	R.
Section I	3,12,91,06,420	5,01,46,97,470
„ II	1,87,18,16,281	2,62,09,27,871
„ III	74,04,00,000	1,13,00,00,000
Total	5,74,13,22,701	8,76,56,25,341
Population	188,000,000	222,000,000
Average income	30·5	39·5

Thus we find that the average income in all British India *rose 29·5 per cent. during the twenty years under review.*

XXII. SECTION IV.—*The Wealth of British India.*

We have so far dealt with the comparison of the income of British India between the years 1875 and 1895, and the figures indicate a substantial increase in the wealth of the country, but there are other indications in this connection which bear inspection, and are of interest and instruction.

Table IX gives the more important heads which show the progress of India between the years 1875 and 1895, and in column 5 is given the increase per head of population in 1895 as compared with 1875, against each item. Those most worthy of notice are the receipts under excise and stamps (Nos. 2 and 3), hoards and ornaments in gold and silver (No. 12), savings banks deposits (No. 18), railway passengers carried and gross earnings (Nos. 22 and 24), registered debt held by natives (No. 27), the various mills and industries (Nos. 28 to 31 and 35), and education (No. 37). The heavy increase in the excise and stamp receipts of 89 and 54 per cent. per head of population is an unmistakable sign of increase in the earnings of the poorer classes, and it may also be said that the increase in the consumption of salt, 22 per cent. per head, also tends in the same direction.

In some cases, such, for example, as No. 12 (hoards and ornaments), the amount given necessarily refers to the whole of India, though the "per head" proportion is taken for the population of British India only, but by so doing the percentage of increase is not appreciably affected.

Some of the items require special remark, and these will now be dealt with.

XXIII.—*Land Revenue.*

The head revenue shows a marked increase of 42 per cent. per head of population, and would at first sight indicate a heavy increase of taxation. But the heads of taxation, apart from taxes on luxuries, in each of the two years was as follows:—

	1875.	1895.
	R.	R.
(1.) Land revenue	22,21,14,580	26,12,53,200
(2.) Salt	6,24,55,550	8,85,90,700
(3.) Provincial rates	1,99,45,930	3,76,52,420
(4.) Customs	2,73,09,260	5,01,79,380
(5.) Assessed taxes	1,46,420	1,83,52,520
(6.) Registration	18,94,870	43,28,580
Total	33,38,66,560	46,03,56,800
Increase	—	12,64,90,240
Per head of population	1·77	2·07
Increase	—	17 per cent.

Of these, however, customs and assessed taxes are mostly paid by the wealthier classes, and even if the entire revenue of the other four heads was paid by the poorer classes, the incidence per head of population in 1875 was R. 1·63, and in 1895 R. 1·76, a very small increase. The most important of these heads is land revenue, and the iniquity of the Government is often dwelt on in enhancing the revenue at the periodical settlements, and it is even urged that these enhancements impoverish the agriculturists, and deprive them of the benefit of years of industry and care and improvements in their land. Attention is therefore invited to Table X, which gives certain details regarding the revenue in the years 1875 and 1895, so far as it is possible to collect them from the official returns. It will be noticed that the permanently settled area was nearly 52 million acres, and yielded a revenue of 444 lakhs of rupees; the area and revenue under this head are shown in the table to be the same in both years, it is possible that the area in 1895 may have been slightly in excess of 1875, but was probably approximately the same. We find that the incidence of the tax per head of population in 1875 was R. ·237 under permanently settled, and R. ·945 under temporarily settled lands, *i.e.*, the incidence on the latter was four times the former. We also find that the revenue per cultivated acre under temporarily settled lands was R. 1·683 in 1875, and R. 1·613 in 1895. Thus it seems that the effect of the enhanced revenue was that this class of *agriculturists actually paid as revenue* 4⅓ *per cent. less per cultivated acre in* 1895 *than it did in* 1875.

It is, however, the permanently settled land owners who have throughout, and still are deriving an enormous benefit from the mistaken generosity of Lord Cornwallis a century ago. If we assume that the temporary settled rates of 1875 were the fair and just ones, the loss incurred in that year, and for many years before, by reason of the permanent settlements, was 4¼ crores, whilst in 1895 it amounted to 5¼ crores (*see* Item 19). The question, however, arises whether the agriculturist should be regarded as entitled to the full benefit of an increase in his land income, derived for the most part from causes with which he has no concern, *e.g.*, a rise in prices, or whether the Government, as land owner of the whole, is not entitled to a percentage of the actual income earned. The Zemindars, &c., who hold the land have now held it for so many years that they regard themselves as the owners, and in that capacity they ordinarily levy rents regulated by the profit derived from the land, with the result that their incomes from rents have been increasing year after year. If the Government, as the real owner of the land, had originally adopted a similar principle, and assuming that the temporary settled rates of 1875 were just and fair, representing 7·6 per cent. of the production, (Mr. Dutt, one of the great champions for a reduction of the land assessment, declares that 20 per cent. would be a fair rate), the land revenue that should have been received in 1895 amounted to 42 crores of rupees, but the actual receipt was 26 crores, plus irrigation receipts 2½ crores, and thus the *loss to Government amounted to* 13½ *crores.*

But the most remarkable feature in the case is that although some one, either the so-called landlord or the tenant, most probably the former, derives this enormous benefit, which can best be described as an unearned increment, the owner of the wealth so derived is exempt from the payment of income tax.

XXIV.—*Net Import of Gold and Silver.*

In order to form an estimate of the amount of gold and silver in India in 1800, it is necessary to take a brief retrospect of the history of the country.

It is said that Indian coins, both in gold and silver, of more ancient date than the earliest settlement of the Phœnicians, are still extant, showing the existence of gold and silver in the country in the days of the aborigines, the Sudars, upwards of four thousand years ago. Gold and silver were used by the Hindus after their successful invasion of India about B.C. 2000, and it is known that in their commerce with the Phœnicians and Babylonians both metals were included, and that the two at one time exchanged, weight for weight, at equal value, but the discoveries of the Spanish and Greek silver mines caused the value of that metal to fall, till, at the time of Alexander the Great's invasion of India, the ratio was 2 of silver to 1 of gold. At this time the currency of India was undoubtedly copper, and gold and silver were only used as subsidiary coins, or "multipliers" of copper money.

Alexander invaded India in B.C. 327, and took back to Persia with him all the gold and silver he could lay hands on, and Delmar, in his "History of Money in Ancient Countries," states that there is evidence of an extraordinary scarcity of both metals for a long time after the conquest, so that we may safely assume that the amount of gold and silver in the country at that period was practically nil.

After Alexander's invasion, India carried on trade with Europe both by the overland trade route through Afghanistan and Persia, and by ships up the Persian Gulf, and gold and silver entered the country in small quantities, and both metals were apparently mainly retained in or sent to Upper India, where they were used as "multipliers" to the copper coinage, or made into ornaments, In Southern India, at this time, it is recorded that gold and silver were both rare, and that the currency was nominally copper, supplemented by cowries, though the cowries were the real currency. This continued till A.D. 1001, when the Turk, Mahmud of Ghazni, conquered the Punjab, and subsequently made twelve expeditions into Hindustan, "plundering temples, and carrying off vast "treasures to Ghazni."

In 1206 Katub-ud-din became Sultan of Delhi, and a career of conquest commenced. From this date a complete series of gold, silver, and copper coins are now extant of all the dynasties up to the present time, and it is this fact, possibly, that has led to an erroneous impression in some quarters regarding the "Ancient "Gold Currency of India," but according to such of the history of India as can be relied on, apart from the flowery imagination of native historians, no such currency ever practically existed. The Mahomedan sovereigns made repeated attempts to substitute a silver for a copper currency, but invariably failed, on account of the scarcity of the metal, and copper remained both the standard and the currency up to 1766; whilst in Bengal, Orissa, and South India the "cowrie" predominated in use as money, and gold and silver were rarely seen. But a certain amount of both metals must, however, have found their way into Bengal and South India, partly imported from the Persian Gulf, and partly produced in the country, and this no doubt accumulated in the temples and palaces of the nobles, because it is reported that the raid made by Allah-ud-din in 1296 resulted in a large accession of gold and silver to the palace in Delhi. From this time up to 1347 continual raids were made into the Deccan, each of which resulting in reputedly large amounts of gold and silver finding their way to Delhi. A considerable amount of this loot was, however, paid away by Mohammed-bin-Tughlak in bribes to the Moghuls who invaded the Punjab, and was taken out of the country by them. In 1398 Timur Shah invaded the Punjab and Hindustan, sacking and plundering wherever he went, and is reported to have carried away immense quantities of gold and silver and jewels. He so denuded India of the precious metals, that Bohlol Lodi (1450-88) was, according to Delmar, "obliged to improvise a new compound "currency to supply the demand for money," though without success. During the fifteenth century the import of the precious metals must necessarily have been very limited, in consequence of the closing of the overland route for the greater portion of the time, because of the strained relations continually existing between the Delhi sovereign and the Afghans and Persians.

Thus we arrive at the year 1498, with but little gold or silver in the country, and what there was, was probably confined to the nobles in the Peninsula of India, and was mainly obtained from the gold mines in the Deccan, about which some remarks will be given later.

In 1498, Vasco de Gama rounded the Cape of Good Hope, and reaching India by sea, opened an entirely new route for commerce, by which India was reached in an easier, cheaper, and safer manner than before. This within a short time altered the relations of India with Europe in every respect. The Portuguese commenced operations by ravaging the coast, plundering the nobles, and seizing all the gold and silver and jewels they could find, but eventually they settled down to trade in recognised forms with Europe, founding their capital in Goa in 1509. Gradually they expanded their empire, but it never extended for more than a few miles inland from the coast. America had been discovered in 1492, and the silver mines of Potosi were opened in 1545; and almost immediately large shipments of the metal were made to the Portuguese in India, which before the end of the century reached 200,000*l.* a year, and from estimates framed from Jacob's "Historical Enquiry into the Production and Consumption of the "Precious Metals" (1831), and Delmar's "History of the Precious

"Metals" (1879), it appears that about 190 crores of rupees was the net import into India between 1498 and 1800.

Similarly, the same authorities are responsible for the estimate of a net import of gold during the same period amounting to 70 million £.

In both cases a considerable portion of the treasure probably went to South India, and in addition the produce of the mines enriched the country, but we must now consider how much of it remained in the country.

In 1525, Baber, the Moghul, invaded India successfully, and sent a present of a "Shahrukkhi," a silver piece equal to about 10*d*., to every man, woman, and child in Afghanistan. In 1556, Akbar ascended the Delhi throne, and soon annexed to his dominions the whole of the North-West of India and Kandahar. In 1586, he commenced interference with Southern India. It is necessary to notice here that the Deccan and the entire peninsula had remained practically unmolested from 1347 to 1586, a period of two hundred and forty years, and during that time must have accumulated a large stock of the precious metals. In 1595 the Moghuls entered the Deccan in force, and annexed Berar.

In 1598 Akbar went south in person, and Khandeish and Ahmednagar fell into his hands, the whole country was sacked, and the treasure carried to Delhi. The conquest and sack of Malwa, Jaipur, Jodhpur, and Chitor next added to the wealth of Delhi. Akbar created numerous mints for the coinage of gold and silver, and made great efforts to change the currency from copper to silver, but completely failed.

After Akbar's death, in 1605, and Jehangir's succession, there followed a series of internal wars and rebellions, which continued during the reigns of Shahjehan and Aurangzebe, and which must have had the usual result of centralising the precious metals into the Imperial Court, into the palaces of the nobles, and into religious places. In 1616 Jehangir invaded the Deccan, and in 1621 and 1629 similar invasions were made by Shahjehan; in the latter of which it is said that "he ravaged and plundered the whole of the "unexhausted parts of the kingdom." From 1629 to 1637 the Deccan was in a state of continual warfare, when it was brought under the sovereignty of Aurangzebe, and the Bahmini kingdom was broken up. In 1650 the same monarch took Hyderabad, the wealthy capital of the Golconda kingdom, plundered it, and exacted a heavy tribute from its ruler. In 1647 the Mahrattas commenced to give trouble, and from that time Southern India was in a continual state of warfare. In 1683 Aurangzebe again invaded the Deccan, attacked Golconda, and Hyderabad was again seized and plundered by the Moghuls; Bijapur, a reputedly wealthy city, was next seized and plundered, and the whole of the Deccan, including considerable territories south of the Kistna, fell under his sovereignty. He also temporarily drove the Mahrattas from the Deccan, and even attacked them in their own strongholds, and looted their cities, and for a time they became practically extinct, but only to rise again, and fill the Deccan "with fire, and rapine, "and terror, and confusion." They received a severe blow in 1698 by the fall of Jingi, but they continued their war on the Moghuls in the Deccan, gradually reducing the country almost to a desert. It is reported that towards the close of Aurangzebe's reign, although he possessed all the wealthiest cities in the Deccan, yet he could not find sufficient money to pay his troops, and had to obtain remittances from Delhi, indicating that the plunder of the Peninsula had been transferred to Upper India.

From Aurangzebe's death in 1707 to 1720, the Deccan remained in the hands of the Moghuls, but the Mahrattas continued to give trouble throughout. In 1720 Asof Jah revolted and secured practical independence, and fixed his capital at Hyderabad, under the title of Nizam. The Mahrattas, however, still continued to give trouble, but Baji Rao, their great chief, died in 1748. Asof Jah died the same year, and the Deccan was again thrown into trouble till in 1761, when the Mahratta power was broken up, and the English had gained considerable ascendency.

Before reverting to the conditions of Upper India, it is necessary now to consider the mining industries in Southern India.

From Mr. Ball's "Survey of the Economic Geology of India," it is clear that indications of gold are to be found all over the country, but that the placer deposits were exhausted at a very early period. It seems that the ancient Indians worked their quartz mines, chiefly in Southern India, ordinarily to some 70 feet, but occasionally to as much as 150 feet. It appears that at this depth the mines were worked out at the time of the conquest of the Deccan by Mahomed-bin-Tuglak, 1331-51, who was the first monarch to attempt to establish a gold or silver standard. With this object he endeavoured to stimulate the yield of the mines, and making use of the experience gained by the Arabians of the Hedjas, considerably deepened the excavations in both the gold and silver mines, and it is reported that a depth of over 300 feet was in some cases pierced. The result was, however, unsatisfactory, and the mines yielded but little, though, no doubt, during the two hundred and forty years of comparative peace that reigned in the Deccan between 1347 and 1586, the imports of the precious metals were supplemented by the produce of the mines. What amount was so produced it is impossible to say, but it is noteworthy that Söetbeer, and every statistician who has estimated the production and consumption of the precious metals, has treated the production of India as a negligible quantity. It is, perhaps, scarcely fair to do this, though the produce was small, and we propose here to estimate a production of 30 millions sterling in gold up to 1761 (by which time the mines had altogether ceased to yield, and 5 millions in silver), mainly from the Cuddapah district in Madras. This estimate, added to the net import up to 1800, gives a supply of 100 million £ in gold, and 195 million £ in silver, and of this almost all the wealth of the Deccan up to 1700, which probably included the almost entire local production, was transferred to Upper India. The bulk of the imports was, however, received between 1700-1800, the Deccan no doubt received its share of these, and consequently this portion remained in the country, and was not affected by the troubles in Upper India, to which reference will now be made.

After the death of Aurangzebe in 1707, the Moghul Empire was thrown into a state of internal warfare, and gradually became more and more disintegrated, and in 1738 Nadir Shah, the Persian, invaded India, conquered the Moghul Emperor, sacked Delhi and all the cities on his line of march, levied tributes, and finally left with the famous peacock throne, the equally famous Koh-i-Noor, and a fabulous amount of precious stones and jewels, the total value of which is put down in Haydn's "Dictionary of Dates" at 625 million £, an altogether ridiculous figure. The amount of precious metals carried away has been variously estimated; but on the authority of the historians Fraser and Hannay, the statistician Macgregor, and Delmar, it may be estimated to have been 30 crores of rupees in silver (then equal to 37 million £) and 20 million £ in gold.

Between the years 1737 and 1761 India was invaded three times by Ahmed Shah Durani, on the last occasion destroying the Mahratta army, and after each of his invasions he carried off "vast stores of treasure."

From 1760 the British ascendency began to extend, and everything was changed, and peace restored. In 1766 the British altered the standard from copper to gold, which, however, proved a failure, and silver was adopted in 1793.

We are now in a position to consider what quantity of gold and silver was in the country in 1800.

We have estimated that the net import, plus production, was 100 million £ in gold and 195 crores of rupees in silver, from which must be deducted the plunder of Baber, of Nadir Shah, of Ahmed Shah Durani, and of the Afghan and frontier raiders, which altogether may be estimated at 30 million £ in gold and 40 crores in silver. From the balance must be deducted the heavy wear and tear and abrasion that must have occurred, the great loss in manufacturing into cups and ornaments, the various uses to which the metals were put which resulted in total loss, such as plating and gilding, and there must have been a very heavy expenditure on this account, especially in the gilding of the domes of the numerous palaces of the nobles. Altogether it may be estimated that the balance of gold and silver in the country in 1800 did not exceed 30 million £ in gold and 90 crores in silver, and this figure we have adopted.

The net imports, plus production, from 1800 to date are known with approximate accuracy; to these have been added the estimated stock of each metal in 1800, as stated above, and from the whole a deduction of 5 per cent. has been made to cover depreciation by abrasion, wear and tear, &c., and the result is given in Table IX.

A certain amount of both gold and silver has left the country since 1800 in the pockets of travellers and pilgrims; but on the other hand a considerable amount of silver has probably been net imported in the inland trade of India, the balance of trade on the frontier having ordinarily been in favour of India.

It may be noted here that the monetary history of India distinctly proves that there never was at any time a gold currency in the country, and none was ever required. Gold was frequently coined in the fifteenth, sixteenth, and seventeenth centuries, a new coin being generally struck after every annexation or victory, but these never actually went into circulation. The ancient accounts, however, show that they were at times kept in gold, for example, accounts kept in the *Pagoda*, a gold coin valued at about R. 3½, in the Madras Presidency, are in existence, but this was done for convenience, the gold coin being only the "multiplier," and not the currency of the country. The history also shows that the silver currency was of a very varying quantity up to the year 1793, and the failures to extend it before that date were more frequent than the successes. After 1793 a silver currency gradually became more and more extended, and with the gradually increasing ascendency of the British power, which brought peace and prosperity, the income of the natives and their ideas rose above cowries and pice, and silver became popular and possible, and eventually became the actual currency of the country. An attempt is now being made to go a step higher, and establish gold as the currency of India, but the figures brought out in this paper tend to show that the native of India, though in a distinctly higher position now than formerly, is still insufficiently prepared for a gold currency, and does not require it. A gold standard has been successfully established, and that is all that is necessary for exchange transactions, for which purpose alone it was required, and it would be sufficient for all practical purposes if a stock of gold was held at Calcutta and Bombay, gold being convertible into silver, and silver into gold at those places, and all gold, with its present one-sided arrangement of issue, be withdrawn from all the treasuries in India.

XXV.—*The Rupee Circulation.*

It will be noticed that the figures given as the rupee circulation of India differ considerably from those published in the official annual currency reports, on the authority of Mr. F. C. Harrison's calculations. Mr. Harrison estimates that the circulation was 115 crores in 1876, 125 crores in 1895, 120 crores in 1898, and 118 in 1900.

These estimates apparently include the balances held in the various treasuries, as they are arrived at from figures received from the treasuries, on the same principle that Jevons ascertained the circulation in England, in 1867, from various banks, the contents of whose tills were included in his estimate of circulation arrived at. Thus if we exclude the treasury cash balances, Mr. Harrison estimates the active rupee circulation to have been R. 100,71,93,000 in 1876, R. 107,63,37,000 in 1895, and R. 106,43,65,000 in 1898, whereas the estimates in Table IX are 110 crores in 1875, 165 in 1895, and 170 in 1898. The circulation of 1895 was admittedly redundant, but apparently commenced to cease to be so in 1898, when the circulation, according to Mr. Harrison, fell to only 5 crores in excess of that of 1876, indicating that India required a circulation at a practically constant figure for a long series of years. This doctrine, and its economic results in connection with the wealth and prosperity of India, are of so remarkable a character that a brief inquiry into the probability of its truth follows.

W. Jacob, one of the greatest authorities on circulation, whose figures and deductions have been accepted by all economists of note, in his work, "An Historical Inquiry into the Production and "Consumption of the Precious Metals," published in 1831, laid it down as a general axiom that, all else remaining the same, *i.e.*, if no development of the country takes place, no improvement in civilisation, no increase in trade, and prices remain constant, an increase in the population requires an augmentation in the commodities which are the subject of exchange commensurate with the increase in their number, and to circulate such commodities an addition of money of an equal percentage is necessary for the purpose. But he also argued that no civilised country does remain the same in its economic conditions during any appreciable period of time, and in comparing England in the year 1700 with

1800, with an increase in the population of 45 per cent., after enumerating the developments that took place during the century, arrived at the conclusion that "it must follow that the new "commodities would, for the most part, not be consumed by those "who produced them, but must have been exchanged for money; "more than double the quantity of silver and gold in the form of "coin must therefore have been required for easy circulation, and "to keep their money prices from falling."

If we apply this theory to India, we find that the population increased by 20 per cent., and if the development of the country between 1875 and 1895 had been only equal to the development of England between 1700 and 1800, an increase in the circulation of not less than 45 per cent. would have been necessary. As a matter of fact, however, the development of India with its 200 millions of people during the period was unquestionably in excess of the development of England during the eighteenth century, with an increase of its small population from 3,800,000 to 5 500,000.

Table IX to some extent illustrates the extraordinary development of India during the twenty years, and the most important proof of this is under the head of railways. It is well known that before the introduction of railways into India, the rupee, as a measure of value, was practically unknown throughout vast areas of the country, and the exchange of commodities was ordinarily carried out by a system of barter. The railways changed all this.

Thirteen thousand miles were added during the twenty years under review, and if this, directly or indirectly, affected only ten miles on either side, the area concerned amounted to 260,000 square miles. Over the greater portion of this vast area a rupee circulation gradually took the place of barter, and civilization increased by leaps and bounds. The statistics show that the foreign trade, merchandise and treasure, nearly doubled, from 100 to 200 crores, and the extent of the increase in the inland trade is illustrated by the carriage of goods by rail rising from 4¼ to 24¼ million tons, that is, increasing about 5⅔ times as great a volume. The number of passengers carried was also nearly 5½ times as many, the number of letters, packets, &c., sent by post nearly 4 times, money orders increased 43 times in number and 23 in value, telegraph messages multiplied 5½ times, and savings bank deposits amounted to 5⅓ times their former value, and represented an increase of 355 per cent. per head of population. To add to all this the immense development of industries must be considered, and not the least important item is the increase of scholastic pupils from 163,000 to 4,303,000. All these and other considerations point to a very heavy increase in the circulation, as a medium of exchange, and it would not have been surprising if it had increased threefold. But let us examine the two estimates offered.

	As Offered by Mr. Harrison.		As Offered by Author.	
	1876.	1900.	1876.	1900.
	R.	R.	R.	R.
Rupees (less cash balances)	101,00,00,000	107,00,00,000	111,00,00,000	189,00,00,000
Small coin....................	9,00,00,000	19,00,00,000	9,00,00,000	19,00,00,000
Copper	3,00,00,000	4,00,00,000	3,00,00,000	4,00,00,000
Total	113,00,00,000	140,00,00,000	123,00,00,000	212,00,00,000
Increase per cent.	—	23·0	—	72·5

Thus Mr. Harrison's estimate shows an increase in the total circulation *less* than the increase in the population (about 23 per cent.), and allows nothing for the various other causes put forth.

It may, however, be argued that the gold value of the rupee and the prices of commodities have materially altered, and that credit has improved, thus removing the necessity for a further increase in the circulation.

The gold value of the rupee was 21 per cent. lower in 1900 than in 1876, and the silver price of commodities rose 24 per cent. between 1875 and 1895, which may be regarded as the normal price of 1900 also, apart from famine considerations. It is not easy to understand how exchange can be considered to have interfered with circulation requirements, and the rise in silver prices was a sure indication that the circulation had become redundant, and must necessarily therefore have increased. As regards credit, it is probable that there has been some increase, chiefly in the shape of bills of exchange, but this would only be for large transactions, and the increase has probably been comparatively small. Credit could not have interfered with the gradually increased demands for cash circulation caused by the development of the country and increase of civilisation, mainly due to the extension of railways.

The system for ascertaining the circulation in India adopted by Mr. Harrison is in agreement, in its general principles, with those of the late Professor W. Jevons's ingenious theory applied to the English circulation in 1867, but differs in some important details. It is perhaps remarkable, however, that Jevons himself appears to have had little faith in the accuracy of his own figures, because after working out a result giving 70 million sterling in sovereigns and half sovereigns, accepted 80 million as a safer estimate, or 95 million including bullion. But even this higher estimate was not accepted by Mr. E. Seyd, three years later, in 1870, in his "Estimate of Monetary Circulation," in which that for Great Britain amounted to 130 million sterling, and it should be remembered that Seyd was a practical bullionist as well as an able economist.

If, therefore, the practical results of the theory were doubted and never officially accepted in England, it is obvious that the probability of failure in India would be considerably greater.

Mr. Harrison's figures give an increase in the rupee circulation of 10 crores of rupees only between 1876 and 1895, and this small increase caused the currency to become redundant. During this period the net import of silver into India, including 4 crores from Scindia's hoards, 3 crores from Upper Burma, and 2 crores from the currency reserve, &c., amounted to about 175 crores. Of this 134 crores were coined (126 crores into rupees), and thus Mr. Harrison's estimate implies that 116 crores of rupees and 41 crores of bullion were either hoarded or made into ornaments during the twenty years, a suggestion which is very difficult to believe.

There are other points that could be put forward to prove the fallacy of the theory for India, but enough has been said to establish its doubtful accuracy. The question has been thus fully gone into because its acceptance has not been beneficial in the past, and might prove a danger in the future. When the scheme for a gold standard in India was under consideration, the one accepted by the Indian authorities had as its most important and vital condition the melting down of rupees for the purpose of reducing the redundancy of the currency. If it had been realised that the required circulation of the country was necessarily rapidly progressive, and that any temporary redundancy could consequently be cured within a comparatively short time by the mere cessation of coinage, the highly expensive and somewhat barbaric method of procedure proposed could hardly have been accepted. But Mr. Harrison's "Rupee Census" had been published in the Official Returns for some years previously, and the results indicated that India required a constant circulation, and the presumption must therefore be that these were accepted as representing the facts, and it was considered that redundancy could not therefore be cured by natural absorption, but the circulation required an absolute reduction by the actual withdrawal and melting down of the currency. Hence the acceptance of the scheme, which was scarcely even considered by the Currency Committee of 1898.

As regards the future, if the figures given in the "Rupee Census" continue to be officially accepted, the opponents of Government will have excellent grounds for pushing their arguments regarding the retrogression and decadence of India under British rule, because either the principle regarding the increase in the circulation of a country laid down by Jacob, and accepted by every economist, is wrong, or, accepting the "Rupee Census" and a circulation in 1900, only slightly in excess of that of 1876, there has not only been no development of the country, and no increase in civilisation, but the circulation having increased in a smaller proportion than the population, there must have been actual retrogression and increased poverty. The figures given in this paper prove that very much the reverse has been the case, but, on the other hand, it would be difficult to prove that an economic doctrine accepted for at least seventy years is erroneous.

It may be noted, in passing, that the reply of the Government witness before the Currency Commission of 1898, that the only estimate of the circulation of India ever made was that of Mr. Harrison (Q. 903) was incorrect. Mr. E. A. Leech, Director of the United States Mint, estimated, by what Jevons described as "the old method of estimation," the circulation in India in 1892 to have been 180 crores. The author of this paper also worked out a careful practical estimate of the circulation from 1835 to 1895, which was published in the *Statistical Journal* for March, 1897 (Appendices E and F, "Silver Prices in India"). Strangely enough the estimate for 1892, including the Treasury balances, amounted to 182 crores, almost precisely the same as Mr. Leech's estimate for the year.

XXVI.—*Hoards and Ornaments.*

The amount in gold and silver estimated as held in the country either as hoarded coin or ornaments, is worked out as follows:—

	1875.	1895.
	R.	R.
Gold converted at R. 15 to a sovereign	1,93,44,30,000	2,57,55,75,000
Silver	4,03,01,25,000	5,69,24,93,000
Total	5,96,45,55,000	8,26,80,68,000
Deduct—		
Rupee circulation	1,10,26,80,000	1,64,90,69,000
Small coin circulation	9,57,34,000	17,11,22,000
Treasury balances	14,53,93,000	17,36,63,000
Currency metallic reserve	5,65,21,000	21,28,10,000
Estimated native States circulation	20,00,00,000	30,00,00,000
Total	1,60,03,28,000	2,50,66,64,000
Balance A	4,36,42,27,000	5,76,14,04,000
Total	5,96,45,55,000	8,26,80,68,000

The balance at A represents the amount in hoards or in the shape of ornaments for the whole of India, and not in British India only, but the population of British India is taken in working out the "per head" figure for the purposes of comparison.

It is impossible to say how much of this vast stock is now hoarded in rupees, and how much is held in the shape of ornaments, or as bullion.

XXVII.—*Exports of Merchandise.*

It has recently been argued in some quarters that the extension of railways has stimulated the export of food grains from India, and thus the surplus stock that was previously stored is now exported, with the result that in time of famine no stock remains in the country, and the natives have nothing to fall back on; in other words, the suggestion is that railways convert scarcity into famine.

Table III gives some idea of the actual facts. If we assume that the entire export of food grains was from the production of British India, the proportion exported was 2·3 per cent. in 1875, and 3·8 per cent. in 1895, or, with an extension of 13,000 miles of line, an increase of 1·5 per cent. in the weight of food crops exported. If we assume that 20 per cent. of the export was provided by the Native States, the proportion exported from British India was 1·8 in 1875 and 3·1 in 1895, an amount which can hardly be seriously considered in such an argument, especially when it is remembered that the bulk of the export is rice, and Burma, where famines are unknown, supplies the greater portion.

It has, however, also been suggested that the facility given to export by the extension of railways has caused land previously cultivated with food crops to be cultivated with non-food crops, thus reducing the food supply of India. At first sight the statistics appear to endorse this view. According to Table II, whilst the population increased 20 per cent., the area under food crops increased 16·3 per cent. only, while that under non-food crops increased 33·6 per cent. But if we examine the quantity produced, we find that whilst the population increased 20 per cent., *the food supply increased 22 per cent.*, and though the non-food crops increased 44·5 per cent., the increase did not reduce the per head food supply, which was actually in excess of the previous per head supply. It should also be remembered that the percentages of increase do not give a proper idea of the facts, because of the total volume of production, 93·8 per cent. in 1875 and 92·7 per cent. in 1895 consisted of food, and 6·2 per cent. in 1875 and 7·3 per cent. in 1895 only of non-food, consequently the increase of 44·5 per cent. in the latter did not, comparatively, represent a high figure.

But the important point, in this connection, has already been referred to under "Total Production" in Section I of this paper, in which it has been shown that the food supply *retained* in India in 1895 was 1·739 lbs. per diem per head of population, against 1·701 lbs. in 1875.

Railways, on the other hand, have enabled grain to be carried from non-famine to famine areas, and have unquestionably materially mitigated the horrors of famine. Had the railways of 1900 been in existence in 1866, some 2 millions of people would not have perished in the famine which covered the small area of Orissa.

XXVIII.—*The Balance Sheet of British India.*

We are now in a position to draw out an approximate balance sheet of the wealth of British India, and this is given in Table XI.

The heads given do not include all that should be included, but those for which approximate figures are available are entered in the table. These form the great bulk of the assets and liabilities, and the greater portion of the omissions, which would only be, comparatively speaking, for small amounts, would appear on the creditor side.

The debtor side includes the debt registered in England converted at the average exchange rate of the year, which was 21·645*d.* in 1875, and 13·638*d.* in 1895, the lowest average on record, with the exception of 1894-95, when it was 13·1*d.* This of course caused the debt in rupees to be much higher than it has since been, for example; although the sterling debt rose from 116 millions in 1895 to 124¼ in 1898, converted into rupees at the exchange rate of the year, it amounted to 204 crores in 1895, and only 187 crores in 1898.

The debtor side also includes the rupee debt, savings banks deposits due to the public in India, all other debts due by Government, and the paid up capital of the various industries in India, invested both in England and in India, so far as it is possible to obtain the information. In several cases in both years, however, the capital is not known, and has been omitted.

The creditor side capitalises the value of the production of the land, the profits of the various companies from information gathered from the income-tax returns, and the value of the mineral production at the uniform rate of 3 per cent. in both years. It also includes the capital expenditure on railways, telegraph, irrigation, and original civil works. These, for the most part, have been paid for out of the registered debt, and from revenue.

The value of live stock is taken from Table VIII, the silver coin circulation, and the gold and silver hoards and ornaments from Table IX, and the cash balances and currency note metallic reserve from the official statistics.

The result gives a balance in favour of India of 13·232 crores in 1875, and 21·902 crores in 1895, equal to R. 703·8 per head of population in 1875, and R. 986·6 per head in 1895, representing *a per head increase in the wealth of India of* 40·2 *per cent.* during the twenty years under review.

XXIX.—SECTION V.—*The Currency Reform.*

It was, and still is, argued by many that the establishment of a gold standard, and fixing the rupee in its relation to the sovereign, was a national calamity, which courted disaster, which would ruin India's foreign trade and her industries, and which would increase the poverty of the millions in the country.

Let us briefly glance at the question from the actual results.

First, taking the balance sheet, Table XI, the exchange rate of the rupee in 1875 was 21·645*d.*, and in 1895 13·638*d.* If we convert the balance in favour of India each year into sterling at these rates, the figures work out to 11,933,783,000*l.* in 1875, and 12,446,111,000*l.* in 1895, giving 63·5*l.* per head in the former year, and 56·1*l.* in the latter. Thus accepting a normal rupee in the two years, the prosperity of the country increased by 40·2 per cent., but if the exchange is considered, it decreased 11·6 per cent. But let us go a step further, and assume that the currency reform had not taken place; it is practically certain that in such a case the rupee would have fallen to something considerably below 11*d.*, but taking that figure, and assuming that the rupee balance sheet in Table XI had remained the same, the balance in favour of India in 1895, if converted into sterling, would have amounted to 10,038,676,000*l.*, or 45·2*l.* per head, representing a fall in prosperity as compared with 1875 of 28·8 per cent.

As a matter of fact the currency reform caused the rupee to rise to 16*d.*, and on this basis the balance in favour of India in 1895 was 14,601,685,000*l.*, equal to 65·8*l.* per head, and an increase of 3·6 per cent. as compared with 1875, with an exchange of 21·645*d.*

This argument, however, assumes that the exchange question should necessarily be introduced when considering the details which assist in ascertaining the economic progress of the country, but it will probably be readily admitted by most that the suggestion is an absurd one. It is obvious that there must be a number of items, some representing the highest values, which cannot be affected by the changes in the gold value of the rupee, and others which can only be affected in an inappreciable degree, and to convert all into sterling would give a result very far from the actual. For example, it would be ridiculous to suggest that the value of the land in India in 1894, with exchange at 13*d.* to the rupee, was, acre for acre, only one-half of what it was in 1868, with exchange ranging in the proximity of 26*d.* to the rupee. As a matter of fact, the figures given in Table XI, treated as rupees of more or less equal value in both years, give an approximate actual representation of the true economic condition of the country in the two years respectively, and show an increase in prosperity during the intervening period measured approximately at 40 per cent.

The items which are governed by the exchange which directly affect the wealth of the country appreciably, are the registered sterling debt and sterling capital investments, and, indirectly, the exports and imports of merchandise.

As regards registered sterling debt, the lower the rupee, the more adverse is the effect on the national wealth, and this is readily seen by the entries against the head in Table XI. The increase in the debt between 1875 and 1895 is shown at 269·4 per cent., but the actual increase in sterling was 132·8 per cent. only. To make the matter clearer, three years should be taken for comparison, 1875 with the high exchange of 21·645*d.* to the rupee, 1894 with the lowest exchange on record of 13·1*d.* to the rupee, and 1899 with exchange at 16·067*d.* The following figures define the position:—

Head.	1875.	1894.	Percentage Increase (+) or Decrease (−).	1899.	Percentage Increase (+) or Decrease (−). compared with 1894.
Rupee	21·645*d.*	13·100*d.*	− 39·5	16·067*d.*	+ 22·6
Registered sterling debt	£49,797,033	£116,005,826	+ 133·0	£124,144,401	+ 7·0
Registered sterling debt in rupees	55,21,50,000	212,52,97,000	+ 282·8	185,44,00,000	− 12·7
Interest on registered sterling debt	2,45,26,000	6,97,54,000	+ 184·4	5,79,12,000	− 17·0

Thus, though the sterling debt due in gold increased by 133 per cent. in 1894, measured in rupees it increased by 283 per cent., and although the sterling debt increased 7 per cent. in 1899 as compared with 1894, it decreased 12½ per cent. measured in rupees.

As regards interest, though the sterling debt itself increased 133 per cent. only in 1894, the interest paid in rupees increased

184 per cent., although the rate was reduced from 4 and 5 per cent. to 3 and 3½ per cent. between the two years. Thus a fall in the exchange value of the rupee clearly acts adversely to the interests of India under the head of sterling debt.

As regards capital investments, the figures for the three years are—

	R.
1875	20,13,70,000
'94	53,06,51,000
'99	76,22,69,000

Thus the capital subscribed during the first nineteen years with open mints was 33 crores, and that during the last five, with closed mints, was 23 crores, which can only be accepted as a satisfactory indication that the rise in the exchange value of the rupee has, as was predicted by many, stimulated the supply of capital, the greater portion of which came from England.

This is forcibly illustrated in column 5 of Table XII, which gives the capital invested each year from 1886-87 to 1899-00, and shows the marked increase each year in the investments after the rupee commenced to rise in value in 1895-96.

It has, however, been urged that the establishment of a gold standard caused a fall in prices, notably in tea and indigo, and that consequently these two industries, and presumably others also, have been practically ruined. It is not possible to enter here in detail into the causes that have acted with such damaging effect to tea and indigo, but it is acknowledged, even by those immediately concerned, that tea is suffering from over-production, and indigo from the successful artificial dye recently invented.

Table XII, column 6, gives the percentage of the income, as derived from the income-tax returns, earned each year by companies, on the capital invested, from 1886-87, the first year of the present tax. We find that in 1892-93 with exchange at 15*d.*, the percentage was 8·2. This fell to 7·6 and 7·5 in the two following years, in which the value of the rupee also fell to 14½*d.* and 13*d.* Thus the falling rupee was not beneficial to profits. In the next two years the closing of the mints began to be felt, the rupee rose to 13½*d.* and 14½*d.*, and the percentages earned on the investments also rose to 7·8 and 8·1, nearly the same figure as in 1892-93, though the capital increased by 13 crores during the four years.

This would seem to indicate that the closing of the mints, and the rise in the exchange value of the rupee, were advantageous to profits. During the next three years the value of the rupee gradually rose to 16·067*d.*, but the percentage on investments earned fell to 7·0, 6·9, and 6·7. It is not difficult, however, to detect the cause of this decline. During the three years no less than 13½ crores was added to the capital, which followed an addition of 13 crores during the previous four years; a new capital does not always give a return at once. The three years were also years of famine or scarcity, which reacted with detrimental effect on the industries. Table IV, column 8, shows the rainfall in 1896, the main effects of which were felt in 1897, to have been 14 per cent. below the average for all India (40 per cent. below the average in the North-Western Provinces, and Oudh, and Punjab). In 1897 and 1898 there were also deficiencies of rain, but the climax was reached in 1899, with the smallest average rainfall on record. The results were naturally disastrous, and the industries suffered in common with everything else in India, and the profits of 1899-1900 fell to 6·7 per cent.

Next we have the over-production of tea, and the introduction of a successful artificial substitute for indigo, the two affecting a large amount of capital. Lastly, to accentuate the other disasters, plague raged throughout India, and Bombay, the principal seat of the cotton industry, was the chief sufferer. These various causes were sufficient to seriously curtail profits, and it was only owing to the wonderful capacity of the country that the fall was not greater than it actually was. This review of the position clearly indicates that profits have not suffered by the closure of the mints, and the rise in the exchange value of the rupee, except so far as foreign capital was thereby drawn to India more rapidly than it could be profitably employed.

The effects of the closing of the mints on the foreign trade of the country has next to be considered. The figures for the three years, excluding re-exports, from both imports and exports, are as follows:—

Head.	1875-76.	1894-95.	1899-1900.
	R.	R.	R.
Rupee	21·645*d.*	13·1*d.*	16·067*d.*
Imports	37,03,80,000	68,18,83,000	71,96,55,000
Exports	56,24,22,000	1,03,84,09,000	1,05,74,43,000

These figures show that the increase in the trade between 1894 and 1899 was not, proportionately, as great as that between 1875 and 1894, the average annual increase in the nineteen years being more than double that in the last five years. The value of the important exports in 1894 and 1899 was as follows:—

Article.	1894-95.	1899-1900.
	R.	R.
1. Coffee	2,12,23,729	1,48,47,146
2. Rice	13,80,70,364	13,09,70,471
3. Wheat	2,93,90,859	4,29,44,335
4. Tea	7,55,57,447	9,09,21,120
5. Opium	9,06,46,652	8,20,87,148
6. Indigo	4,74,59,393	2,69,25,107
7. Cotton, raw and manufactured	15,85,69,354	18,19,91,892
8. Jute, „	14,78,68,104	14,33,59,960
9. Hides and skins „	6,55,99,402	10,46,28,753
10. Seeds	14,20,37,784	10,09,95,284
11. Other exports	12,19,85,912	13,78,21,784
Total	103,84,09,000	105,74,43,000

A larger quantity of coffee was exported in 1899 than in 1894, but the price fell heavily for causes independent of the exchange value of the rupee.

The value of tea exported increased 20 per cent., but the quantity increased 34 per cent., denoting a heavy fall in price due to over-production. Indigo fell away for reasons already given. Cotton shows a considerable increase, but the capital added to the manufacturing industry increased considerably, and the out-turn apparently became in excess of the demand, and prices fell, or the increase in the export value would have been greater.

Hides and skins owe their increase entirely to the raw material, the large supply being a result of the famine and loss of cattle.

Oil seeds fell off very materially in consequence of the very deficient rainfall of 1899, chiefly in the Central Provinces, Bombay, North-Western Provinces, and the Punjab, in the regions where seeds are largely cultivated.

Thus we find that the increase in the exports from India in 1899, though considerably higher than in 1894, were not greater, for reasons quite unconnected with the exchange value of the rupee.

There is one point in connection with the trade of India and the closing of the mints, which appears to have escaped the notice of economists, and that is, the particular part that India plays in fixing gold prices. It will be remembered that during the series of years that the gold value of the rupee was falling from about 23*d.* in 1871 to 13*d.* in 1894, gold prices fell from 100 to 63. The author of this paper contended, during the discussion that went on previous to 1893, when the mints were closed, that the method of payment of the Indian debt in England by public auction, combined with the fact that the mints were open to the free coinage of silver in India, raised a competition which materially helped the fall in the gold value of the rupee, and in that of gold prices generally. The opponents of closed mints, on the other hand, contended that it would cause the gold value of the rupee to rise, and, as gold prices would continue to fall, as they had steadily done for twenty years, India would either have to reduce her silver prices, or her export trade would cease. But what do we find has actually resulted? Gold prices continued to fall in 1895 to 62, and in 1896 to 61, and then a rise, the natural result of the altered circumstances, commenced, till in 1900 we find gold prices standing at 75. It is this gradual rise in gold prices that has to a great extent prevented the export trade of India from decreasing, in spite of the enormous difficulties experienced from 1896-99, and with good rainfall in the future, accompanied by the present progressive policy, trade will increase by leaps and bounds.

APPENDIX.

TABLE I.—*Population of British India, excluding Upper Burma and Baluchistan, including Berar.*

Occupation.	1875.				1895.				Percentage to Total of Population in 1895.
	Male Adults.	Males under 15.	Females.	Total.	Male Adults.	Males under 15.	Females.	Total.	
SECTION I.									Per cent.
1. Agriculture (including produce dealers and land occupants not cultivating)	35,886,000	23,924,000	58,590,000	118,400,000	42,627,000	28,419,000	68,592,000	139,638,000	62·9
SECTION II.									
2. Labourer	5,009,000	3,338,000	7,963,000	16,310,000	5,734,000	3,872,000	9,264,000	18,870,000	8·5
3. Domestic	2,157,000	1,464,000	3,390,000	7,011,000	2,611,000	1,764,000	4,251,000	8,626,000	3·9
4. Industrial	9,249,000	6,185,000	14,371,000	29,805,000	10,684,000	7,081,000	17,415,000	35,180,000	15·9
5. Military (excluding officers)	234,000	25,000	155,000	414,000	246,000	30,000	174,000	450,000	0·2
6. Administration "	1,008,000	673,000	1,442,000	3,123,000	1,154,000	770,000	1,855,000	3,779,000	1·7
7. Commerce	189,000	123,000	299,000	611,000	240,000	162,000	346 000	748,000	0·3
8. Transport	783,000	523,000	1,282,000	2,588,000	1,086,000	691,000	1,526,000	3,253,000	1·5
9. Miscellaneous	1,568,000	1,040,000	2,590,000	5,198,000	1,812,000	1,206,000	3,010,000	6,028,000	2·7
Total Section II	20,197,000	13,371,000	31,492,000	65,060,000	23,517,000	15,576,000	37,841,000	76,934,000	34·7
Total Sections I and II	56,083,000	37,295,000	90,082,000	183,460,000	66,144,000	43,995,000	106,433,000	216,572,000	97·6
SECTION III.									
10. Professions	529,000	353,000	805,000	1,687,000	639,000	426,000	959,000	2,024,000	0·9
11. Commerce	596,000	400,000	985,000	1,981,000	754,000	500,000	1,109,000	2,363,000	1·1
12. Military officers	3,800	—	4,000	7,800	4,030	—	4,000	8,030	
13. Civil officers	2,600	—	3,000	5,600	2,770	—	3,000	5,770	
14. Estate agents, railways, factories, and other officers	141,000	80,000	212,000	433,000	172,000	108,000	240,000	520,000	0·4
15. Independent	130,600	86,000	209,000	425,600	154,200	101,000	252,000	507,200	
Total Section III	1,403,000	919,000	2,218,000	4,540,000	1,726,000	1,135,000	2,567,000	5,428,000	2·04
Grand Total	57,486,000	38,214,000	92,300,000	188,000,000	67,870,000	45,130,000	109,000,000	222,000,000	100·0

TABLE II.—*Cultivation and Production in British India, excluding Upper Burma and Baluchistan, but including Berar.*

Crops.	(a.) Area under Cultivation.		(b.) Yield per Acre.		(c.) Total Production.		(d.) Average Price per Cwt.		(e.) Value of Production.		(f.) Remarks.
	1875.	1895.	1875.	1895.	1875.	1895.	1875.	1895.	1875.	1895.	
	acres.	acres.	lbs.	lbs.	cwt.	cwt.	R.	R.	R.	R.	
1. Rice	52,000,000	67,900,000	1,090	1,100	506,071,000	666,875,000	3·0	3·8	1,51,82,13,000	2,53,41,25,000	
2. Wheat	15,500 000	18,500,000	550	600	75,402,000	99,107,000	2·5	3·4	18,85,05,000	33,69,63,800	
3. Jowar	18,000,000	19,900,000	640	650	108,857,000	115,491,000	2·54	3·10	26,12 56,780	35,80,22,100	
4. Bajra	9,500,000	10,600,000	480	490	41,562,000	46,375,000	2·15	2·40	8,93,58,000	11,13,00,000	
5. Grain	9,600,000	11,800,000	580	590	49,000,000	62,161,000	1·97	2·45	9,65,30,000	15,22,94,460	
6. Maize	4,000,000	5,300,000	890	900	31,786,000	42,589,000	1·68	2·79	5,35,02,480	11,88,23,310	
7. Barley	4,000,000	5,800,000	690	700	24,643,000	36,250,000	1·71	2·20	4,21,39.530	7,97,50 000	
8. Ragi	3,200,000	3,600,000	690	700	19,714,000	22,500,000	2·0	2·2	3,94,28,000	4,95,00,000	
9. Other grains	32,000,000	26,600,000	540	550	154,286,000	130,625,000	2·5	3·65	38,57,15,000	47,67,81,250	
10. Sugar	2,300,000	3,100,000	1,900	1.950	39,018,000	52,589,000	4·84	5·09	18 88,47,120	26,76,78,010	
11. Spices	900,000	1,000,000	150	150	1,205,000	1,339,000	17·9	23·5	2,15,69,500	3,14,66,500	
12. Other food	1,500,000	1,900,000	570	600	7,634,000	10,179,000	2·0	2·4	1,52,68,000	2,44,29,600	
13. Orchards and gardens	1,200,000	2,700.000	500	500	5,357,000	12,054,000	3·0	3·7	1,60,71,000	4,45,99,890	
14. Total food	153,700,000	178,700,000	776	814	1,064,535,000	1,298,134,000*	2·7	3·5	2,91,64,03,410	4,58,57,33,820	* Increase in production = 21·9 per cent.
15. Cotton	6,600,000	9,500,000	75	75	4,420,000	6,362,000	24·64	26·88	10.89.08,800	16,90,10,560	
16. Jute	850,000	2,200,000	1,100	1,100	8,348,000	21,607,000	5·38	8·18	4,49,12,240	17,67,45,260	
17. Other fibres	400,000	500,000	600	600	2,143,000	2,679,000	2·0	2·0	42,86,000	53,58,000	
18. Tobacco	950,000	1,100,000	920	950	7,804,000	9,330,000	16·0	14·0	12,48,64,000	13,06,20,000	
19. Linseed	3,000,000	3,000,000	320	350	8,571,000	9,375,000	5·5	7·5	4,71,40,500	7,03,13,500	
20. Til	2,600,000	3,000,000	300	320	6,964,000	8,571,000	5·8	8·1	4,03,91,200	6,94,25.100	
21. Other seeds	4,800,000	6,500,000	330	350	14,143,000	20,314,000	4·8	5·6	6,78,86,400	11,37,47,200	
22. Miscellaneous: Non-food	1,100,000	1,400,000	600	600	5,893.000	7,500,000	4·0	4·8	2,35,72,000	3,60 00,000	
23. Fodder crops	1,700,000	2,200,000	800	800	12,143,000	15,714,000	1·0	1·0	1,21,43,000	1,57,14,000	
24. Total non-food	22,000,000	29,400,000	359	387	70,429,000	101,452,000	6·7	7·7	47,41,04,140	78,69,32,620	
25. Total food and non-food	175,700,000	208,100,000	724	753†	1,134,964,000	1,399,586,000	2·9	3·8‡	3,39,05,07,550	5,37,26,66,440	† Increase = 4 per cent.
26. Opium	530,000	530,000	20	13·5	94,300	63,900	273·0§	325·0§	2,57,43,900	2,07,67,820	
27. Total	176,230,000	208,630,000	—	—	1,135,058,300	1,399,649,900	—	—	3,41,62,51,450	5,39,34,34,260	‡ Increase = 31 per cent.
28. Tea	110,000	400,000	—	—	—	—	—	—	2,30,00,000	8,17,42,460	§ 5s. a seer in 1875, and 6s. in 1895, paid by Government to cultivators
29. Coffee	130,000	130,000	—	—	—	—	—	—	1,63,00,000	2,73,39,000	
30. Indigo	830,000	1,600,000	—	—	—	—	—	—	2,87,60,000	5,36,00,000	
31. Grand total	177,300,000	210,760,000	—	—	—	—	—	—	3,48,43,11,450	5,55,60,15,720	
Opium. Balance of production not included in 26	—	—	—	—	—	—	—	—	3,15,53,190	3,16,28,230	
Grand Total	—	—	—	—	—	—	—	—	3,51,58,64,640	5,58,76,43,950	

TABLE III.—*Exports and Production.*

Export.	Exported.				Production.				Percentage of Production Exported.		Remarks.
	Weight.		Value.		Weight.		Value.				
	1875.	1895.	1875.	1895.	1875.	1895.	1875.	1895.	1875.	1895.	
SECTION I. *Agricultural Food.*	cwt.	cwt.	R.	R.	cwt.	cwt.	R.	R.			
1. Rice	20,619,000	35,152,000	5,31,16,000	13,53,73,000	506,071,000	666,875,000	1,51,82,13,000	2,53,41,25,000	4·1	5·3	
2. Wheat	2,498,000	10,665,000	90,10,000	4,32,96,000	75,402,000	99,107,000	18,85,05,000	33,69,63,800	3·3	10·8	
3. Other grains	647,000	2,516,000	20,37,000	84,16,000	429,848,000	455,991,000	96,79,29,790	1,34,64,71,110	0·15	0·5	
4. Spices	217,000	263,000	34,33,000	48,95,000	1,205,000	1,339,000	2,15,69,500	3,14,66,500	18·0	20·0	
5. Sugar	420,000	1,063,000	25,38,000	57,47,000	39,018,000	52,589,000	18,88,47,120	26,76,78,010	1·1	2·0	
6. Other food	—	211,000	—	6,19,000	12,991,000	22,233,000	3,13,39,000	6,90,29,400	—	—	
7. Total food	24,401,000	49,870,000	7,01,34,000	19,83,46,000	1,064,535,000	1,298,134,000	2,91,64,03,410	4,58,57,33,820	2·3	3·8	
8. Deduct 20 per cent. as estimate provided by Native States	4,880,000	9,974,000	—	—	—	—	—	—	—	—	The population of the Native States is equal to nearly 30 per cent. of that of British India, and their area is about 61 per cent.
9. Balance	19,521,000	39,897,000	—	—	—	—	—	—	1·8	3·1	
SECTION II. *Agricultural, Non-Food.*											
10. Raw cotton	5,010,000	5,248,000	13,27,90,000	14,09,02,000	4,420,000	6,362,000	10,89,08,000	16,90,10,560	117·6	110·8	
11. Cotton goods	190,000	1,800,000	66,34,000	8,34,46,000							
12. Raw jute	5,184,000	12,267,000	2,79,32,000	9,99,29,000	8,348,000	21,607,000	4,49,12,240	17,67,45,260	69·3	76·7	
13. Jute goods	600,000	4,300,000	48,96,000	4,74,74,000							
14. Seeds	10,507,000	13,672,000	5,46,20,000	9,71,74,000	29,678,000	38,260,000	15,54,18,100	25,34,84,800	35·4	35·7	
15. Tobacco	207,000	90,000	16,95,000	18,25,000	7,804,000	9,330,000	12,48,64,000	13,06,20,000	2·6	1·0	
16. Opium	121,000	84,000	11,14,84,000	8,45,93,000	94,300	63,900	2,57,43,900	2,07,67,820	128·0	131·0	The figure given as the value of opium produced is the amount paid to the cultivator.
17. Miscellaneous	610,000	4,336,000	36,88,000	1,55,23,000	20,179,000	25,893,000	4,00,01,000	5,70,72,000	3·0	16·7	
18. Total agricultural, non-food	22,429,000	41,797,100	34,37,39,000	57,08,66,000	70,523,300	101,515,900	49,98,47,240	80,77,00,440	31·8	41·1	
19. Total agricultural	46,830,000	91,667,100	41,38,73,000	76,92,12,000	1.135,058,300	1,399,649,900	3,41,62,50,650	5,39,34,34,260	4·1	6·5	
20. Add 20 per cent. for production in Native States	—	—	—	—	227,011,700	279,930,000	—	—	—	—	
21. Total agricultural	46,830,000	91,667,100	41,38,73,000	76,92,12,000	1,362,070,000	1,679,579,900	—	—	3·4	5·5	

TABLE III *Contd.—Exports and Production.*

Export.	Exported.				Production.				Percentage of Production Exported.		Remarks.
	Weight.		Value.		Weight.		Value.				
	1875.	1895.	1875.	1895.	1875.	1895.	1875.	1895.	1875.	1895.	
SECTION III.	cwt.	cwt.	R.	R.	cwt.	cwt.	R.	R.			
Non-Agricultural.											
22. Tea and coffee	—	—	3,79,34,000	9,86,31,000	—	—	—	—	—	—	
23. Hides and skins	—	—	2,94,33,000	7,63,95,000	—	—	—	—	—	—	
24. Manufactures	—	—	1,23,95,000	2,93,71,000	—	—	—	—	—	—	
25. Raw materials	—	—	2,64,50,000	4,25,97,000	—	—	—	—	—	—	
26. Metals.....................	—	—	3,57,000	11,92,000	—	—	—	—	—	—	
27. Provisions	—	—	22,28,000	55,21,000	—	—	—	—	—	—	
28. Drugs	—	—	43,50,000	69,53,000	—	—	—	—	—	—	
29. Indigo......................	—	—	2,87,92,000	5,35,45,000	—	—	—	—	—	—	
30. Oil	—	—	39,78,000	73,87,000	—	—	—	—	—	—	
31. Animals	—	—	8,56,000	16,11,000	—	—	—	—	—	—	
32. Parcel post and unenumerated	—	—	15,95,000	30,41,000	—	—	—	—	—	—	
33. Total non-agricultural.........	—	—	14,83,68,000	32,62,44,000	—	—	—	—	—	—	
34. Grand total	—	—	56,22,41,000	1,09,54,56,000	—	—	—	—	—	—	

TABLE IV.—*Area in Acres under Irrigation, excluding Upper Burma.*

1 Year.	2 By Government Canal.	3 By Private Canal.	4 By Tanks.	5 By Wells.	6 By other Sources.	7 Total.	8 Average Rainfall in India. Average of 35 years = 100.	9 Average Rainfall in British India. Average of 35 years = 100.	10 Average Rainfall in the Punjab, N.-W.P. and Oudh, Central Provinces, Berar, Bombay, and Madras.	Remarks on Statistics of Irrigation.
1884–85 ...	5,032,373	6,690,001	3,188,775	5,883,357	1,675,738	22,470,244	100	97	105	Bengal and Bombay omitted. Classification of other provinces imperfect.
'85–86 ...	6,901,559	930,715	4,382.397	8,742,798	2,141,353	23,098,822	102	102	103	Classification imperfect. Bengal omitted.
'86–87 ...	6.892,251	921,186	4,850,942	8,489,566	2,096,585	23,250,530	106	105	104	
'87–88 ...	7,506.309	986,795	4,776,682	9.398,596	2,267,715	24 936,091	104	103	107	
'88–89 ..	8,375,336	1,065,715	5,092,654	9,618,466	2,191,348	26,343.519	98	101	100	
'89–90 ...	9,113,047	1,079,810	5,335.961	9,967,701	2,225,922	27,722,441	106	105	105	
'90–91 ...	8,998,477	833,076	5,346,729	10,061,620	2 551,481	27,791,383	104	104	105	
'91–92 ..	8,966,338	926,776	3,683,146	9.986,499	3.124,304	26,687,063	91	93	95	
'92–93 ...	8,177,728	1,752.500	3,952,341	9,995,129	2,535,680	26,413.378	112	105	112	
'93–94	8,150,039	1,696,033	5,284,883	9,580,311	1,482.248	36,193,514	120	113	115	Bengal omitted. Classification of Oudh imperfect.
'94–95 ...	8,001,359	1,046,670	4,610.243	7.700,167	1,299.735	23,258,174	113	113	119	
'95–96 ...	9,243,527	914.712	5,016,037	9,906,120	1,070,893	26,151,289	92	90	93	
'96–97 ...	10,834,835	1,008.565	3,658,368	12,338,869	956,430	28,797,067	86	88	88	
'97–98 ...	11,560,950	1,146,187	4,584,130	11,324,088	1,171,646	29,787,001	95	100	101	
'98–99 ...	11,563,221	1,013,926	4,919,968	11,094,747	1,138,448	29,730,310	96	97	96	Classification of Bengal and Oudh imperfect.
'99–1900	12,081,576	1,003,525	4,258,511	12,280,007	1,121,416	30,745,035	70	77	61	

Note.—In 1891-92................ Deficiency in Punjab (85), Madras (85), Bombay (83).
" '95–96................ " " (87), Bombay (88).
" '96–97................ " " (60), N.-W.P. (60).
" '97–98................ " " (83).
" '98–99................ " " (84), Central Provinces (87), Bombay (96).
" '99–1900............ " " (40), N.-W.P. (89), Central Provinces (46), Bombay (52), Madras (79).

TABLE V.—*Receipts and Expenditure on Account of Irrigation.*

Year.	Receipts.	Expenditure.							Remarks.
		Construction Charged to Irrigation.	Construction Charged to Famine.	Total.	Working Expenses.	Total.	Interest on Debt Charged to Irrigation.	Grand Total.	
	R.	R.	R.	R.	R.	R.	R.	R.	
Prior to 1867-68	2,84,00,380	5,29,31,390	—	5,29,31,390	6,12,31,150	11,41,62,540	26,20,710	11,67,83,250	The figures for working expenses and interest prior to 1867-68 are given as they appear in the old accounts, but are incorrect. In both cases some portion should apparently have been charged to construction.
1867-68	35,68,130	21,35,190	—	21,35,190	72,99,720	94,34,910	5,42,320	99,77,230	
'69	31,93,345	46,74,810	—	46,74,810	77,10,120	1,23,85,930	6,81,310	1,30,67,240	
'70	53,49,790	1,98,37,160	—	1,98,37,160	79,01,500	2,77,38,660	11,76,540	2,89,15,200	
'71	48,55,537	70,13,240	—	70,13,240	74,76,360	1,44,89,600	17,21,700	1,62,11,300	
'72	47,15,800	98,80,630	—	98,80,630	68,04,450	1,66,85,080	20,62,170	1,87,47,250	
'73	41,35,350	78,63,110	—	78,63,110	89,26,730	1,67,89,840	24,13,120	1,92,02,960	
'74	47,51,740	1,20,71,850	—	1,20,71,850	85,75,580	2,06,47,430	28,07,050	2,34,54,480	
'75	47,64,500	1,25,71,630	—	1,25,71,630	93,32,240	2,19,03,870	32,93,860	2,51,97,730	
1875-76	57,50,380	1,18,10,340	—	1,18,10,340	1,10,78,190	2,28,88,530	53,95,370	2,82,83,900	
	6,94,84,952	14,07,89,350	—	14,07,89.350	13,63,37,040	27,71,26,390	2,27,14,150	29,98,40,540	
1876-77	59,93,010	1,02,39,930	—	1,02,39,930	95,74,800	1,98,14,730	58,36,390	2,56,51,120	
'78	81,68,220	88,52,200	—	88,52,200	1,10,75,810	1,99,28,010	62,18,220	2,61,46,230	
'79	91,78,260	84,55,780	—	84,55,780	1,02,50,490	1,87,06,270	65,64,380	2,52,70,650	
'80	1,51,95,010	66,82,180	—	66,82,180	1,07,42,510	1,74,24,690	68,67,130	2,42,91,820	
'81	1,62,68,200	69,84,200	—	69,84,200	1,11,19,890	1,81,04,090	71,40,460	2,52,44,550	
'82	1,47,94,590	56,63,710	13,54,490	70,18,200	1,30,55,500	2,00,73,700	74,18,630	2,74,92,330	
'83	1,53,38,280	2,73,07,860	26,34,430	2,99,42,290	1,43,18,420	4,42,60,710	81,57,760	5,24,18,470	
'84	1,61,25,790	1,72,75,800	28,32,170	2,01,07,970	1,26,58,150	3,27,66,120	89,36,650	4,17,02,770	
'85	1,67,59,750	70,04,610	25,30,460	95,35,070	1,31,69,800	2,27,04,870	93,20,040	3,20,24,910	
'86	1,58,82,780	57,82,150	18,68,070	76,50,220	1,32,32,210	2,08,82,430	96,48,470	3,05,30,900	
'87	1,65,67,050	54,98,880	10,79,790	65,78,670	1,31,55,540	1,97,34,210	99,25,910	2,96,60,120	
'88	1,71,42,740	53,58,430	9,10,060	62,68,490	1,44,13,090	2,06,81,580	1,01,75,420	3,08,57,000	
'89	1,90,07,180	46,88,810	7,05,370	53,94,180	1,57,32,560	2,11,26,740	1,04,07,170	3,15,33,910	
'90	1,99,10,780	38,74,500	7,14,570	45,89,070	1,58,35,060	2,04,24,130	1,06,06,830	3,10,30,960	
'91	2,17,25,780	50,44,840	7,43,920	57,88,760	1,64,00,540	2,21,89,300	1,08,14,390	3,30,03,690	
'92	2,27,20,400	75,51,160	7,79,310	83,30,470	1,80,98,890	2,64,29,360	1,10,96,780	3,75,26,140	
'93	2,41,89,020	54,16,010	6,07,930	60,23,940	1,79,15,830	2,39,39,770	1,13,83,860	3,53,23,630	
'94	2,29,64,090	70,50,380	5,63,510	76,13,890	1,67,36,550	2,43,50,440	1,16,55,580	3,60,06,020	
'95	2,33,88,150	61,58,080	4,31,100	65,89,180	1,73,70,020	2,39,59,200	1,19,41,150	3,59,00,350	
1895 96	2,29,99,530	71,96,010	3,83,170	75,79,180	1,73,42,680	2,49,21,860	1,22,24,090	3,71,45,950	
	34,43,18,610	16,20,85.520	1,81,38,350	18,02,23,870	28,21,98,340	46,24,22,210	18,63,39,310	64,87,61,520	
1896 97	3,15,06,390	74,89,880	4,68,300	79,58,180	1,98,89,900	2,78,48,080	1,25,34,790	4,03,82,870	
'97-98	3,56,98,640	70,51,460	3,75,170	74,26,630	1,84,71,210	2,58,97,840	1,28,42,490	3,87,40,320	
'98-99	3,46,30,740	66,79,000	1,16,690	67,95,690	1,86,63,910	2,54,59,600	1,31,26,940	3,85,86,540	
1899 1900	3,59,97,930	90,60,320	3,58,950	94,19,270	2,04,09,975	2,98,29,245	1,34,51,235	4,32,80,480	
	13,78,33,700	3,02.80,660	13,19,110	3,15,99,770	7,74,34,995	10,90,34,765	5,19,55,455	16,09,90,220	
	55,16,37,262	33,31,55,530	1,94,57,460	35,26,12,990	49,59,70,375	84,85,83,365	26,10,08,915	1,10,95,92,280	

TABLE VI.—*Receipts and Expenditure in British India, including Berar, and excluding Upper Burma.*

Heads.	No. 1.				No. 2.			
	Receipts.		Expenditure.		Receipts.		Expenditure.	
	1875.	1895.	1875.	1895.	1875.	1895.	1875.	1895.
	R.	R.	R.	R.	R.	R.	R.	R.
1. Refunds	—	—	30,26,960	30,00,490	—	—	30,49,780	29,84,950
2. Assignments, &c.	—	—	90,35,240	1,55,47,119	—	—	92,08,740	1,56,69,810
3. Land revenue	21,54,04,800	26,20,09,550	2,95,13,550	4,09,71,170	22,21,14,530	26,12,53,200	3,10,18,450	4,03,63,960
4. Opium	8,47,14,256	7,12,39,220	2,21,86,430	2,06,89,411	8,47,14,250	7,13,63,070	2,21,86,430	2,06,89,410
5. Salt	6,24,55,550	8,86,18,450	50,86,920	52,10,440	6,24,55,550	8,85,90,720	50,86,920	52,09,300
6. Stamps	2,83,53,680	4,72,70,550	11,03.090	17,16,940	2,87,83,780	4,78,43,290	11,13,010	17,40,450
7. Excise	2,49,43,390	5,72,24,170	8,72,260	20,79,570	2,59,32,940	5,79,10,530	8,72,260	20,58,770
8. Provincial rates	1,94,72,550	3,70,70,050	5,27,350	5,26,750	1,99,45,930	3,76,52,420	5,27,350	5,26,750
9. Customs	2,72,44,260	5,01,72,780	18,77,110	20,29,480	2,73,09,260	5,01,79,380	18,77,110	20,29,480
10. Assessed taxes	1,46,420	1,83,51,890	100	2,98,680	1,46,420	1,83,52,520	100	3,03,040
11. Forest	69,75,430	1,66,05,040	42,00,910	91,11,680	72,08,210	1,48,18,100	42,92,410	87,81,260
12. Registration	18,76,510	42,48,700	13,64,490	23,30,840	18,94,870	43,28,580	13,80,710	23,78,340
13. Tributes	72,61,880	79,23,010	—	—	72,61,880	75,73,260	—	—
14. Debt heads	58,22,060	82,50,520	4,82,89,400	4,04,47,990	58,25,000	82,36,560	4,82,90,800	4,04,42,770
15. Post office, telegraph, and mint	1,18,71,630	2,84,03,530	1,52,37,050	2,59,48,800	1,18,71,630	2,84,03,600	1,52,43,870	2,59,71,190
16. Civil	2,58,01,630	2,78,04,360	14,70,55,890	21,10,61,920	2,60,38,200	2,76,22,270	14,89,69,270	20,51,65,870
17. Famine	—	—	63,17,100	59,41,460	—	—	63,17,100	59,41,460
18. Railways	4,57,45,070	21,85,91,890	6,13,32,670	23,47,94,570	4,57,45,070	21,83,45,400	6,13,32,670	23,40,91,440
19. Irrigation	57,50,380	2,29,99,530	1,72,21,060	2,97,63,110	57,50,380	2,29,27,850	1,72,21,060	2,91,99,410
20. Military	1,07,38,550	1,02,77,100	17,03,96,350	26,70,54,440	1,07,57,500	1,02,40,820	17,31,68,920	27,01,02,820
21. Public works	50,73,550	66,41,330	3,34,61,920	4,60,45,740	52,29,320	65,36,920	3,44,91,140	4,41,25,570
Total	58,96,51,590	98,37,01,670	57,81,05,850	96,45,70,600	59,89,84,720	98,21,76,490	58,56,48,100	95,77,75,550

TABLE VII.—*Average Wages and Pay of Government Officials in British India.*

1	2		3		4		5		6		7		8		9		10		11		12	
Province.	Population.		Agricultural Labourer.		Unskilled Labour.		Postmen.		Postal Runners.		Skilled Labour.		Common Mason, Carpenter, and Blacksmith.		Police (all ranks below Gazetted Officers).		Government Officials over R. 300 per Mensem (excluding Departmental Government Officers).		Government Officials on R. 300 per Mensem and under.		Government Officials (Illiterate Class).	
	1875.	1895.	1875.	1895.	1875.	1895.	1875.	1895.	1875.	1895.	1875.	1895.	1875.	1895.	1875.	1895.	1875.	1895.	1875.	1895.	1875.	1895.
	Millions.	Millions.	R. per mensem.																			
Burma	3	5	20·17	13·91	—	—	—	—	—	—	—	—	25·83	25·77	14·3	17·6	434	707	92·2	82·6	14·8	11·8
India General	1	1	5·00	5·07	—	—	8·0	9,17	—	—	—	—	9·25	13·35	12·2	14·6	475	559	86·6	67·5	10·2	8·6
Assam	4	5	6·94	7·50	—	—	10·0	12,25	—	—	—	—	15·62	25·62	9·2	10·7	347	501	93·3	56·0	7·6	8·5
Bengal	62	73	5·13	6 48	7·0[a]	8·5	9·0	10,18	4·42	5·05	—	—	9·58	12·12	11·4	11·2	595	457	39·6	47·2	6 3	7·1
N.-W. Provinces	32	35	4·13	4·87	6·0[b]	7·0	8·25	8,57	4·00	5·00	10·50[c]	14·75	9·54	10·42	10·1	12·1	370	732	26·5	27·3	7·0	5·9
Oudh	11	13	3·33	3·52	—	—	8·25	8,25	—	—	—	—	7 00	9 68	—	—	—	—	—	—	—	—
Punjab	18	21	5·64	6·70	6·0[d]	6·5	8·00	9,42	5 00	5·25	13·45[e]	21·54	13·49	16·82	9·4	10·6	505	567	48·1	35·2	6·0	6·3
Bombay	16	19	8·21	8·18	7·5[f]	8·5	11·28	11,13	7·00	7·00	16·9[f]	17·90	23·00	23·20	11·9	13·7	383	604	29 2	31·3	8·2	9·4
Central Provinces	8	11	3·67	3·83	—	—	7·75	9,28	5 00	6·00	—	—	12·67	12·44	8·7	10·2	333	594	51·5	29·8	5·7	8·5
Berar	2	3	5·00	7·50	—	—	—	—	—	—	—	—	21·50	22·50	—	—	—	—	—	—	—	—
Madras	31	36	4·28	5·05	7·0[g]	8·5	8·65	9,7	6·25	6·50	22·47[g]	24·19	12·43	14·53	10·2	11·2	347	603	28·3	38·0	6·0	6·4
Multiplied by population and reduced to a unit	188	222	5·24	6·05	6·72	7·99	8·83	9·72	5·01	5·57	15·93	19·63	12·50	14·27	10·6	12·2	466	535	36·7	39·9	6·8	7·4
Per annum	—	—	62·88	72·60	80·64	95 88	105·96	116·64	60·12	66 84	191·16	235·56	150·00	171·24	—	—	5.592	6,420	440	478	82	89
Increase in 1895	—	—	—	Per ct. 15·46	—	Per ct 18·9	—	Per ct. 10·64	—	Per ct 11·17	—	23·25	—	14·16	—	—	—	—	—	—	—	—

Note.—In columns Nos. 9 to 12 the average is arrived at from the actual numbers employed in each province, and not by the population.

[a] Bengal Paper Mills and Ranigunze Coal Mine.

[b] Cawnpore Boot and Harness Factories.

[c] Delhi and Cawnpore East Indian Railways.

[d] Murree Brewery and two northern mills.

[e] N.-W. Railway, Lahore, and northern mill.

[f] Manaekjee Petit Mill. Bombay from 1892.

[g] Binny and Co., Macbras Mill.

TABLE VIII.—*Live Stock, British India.*

Stock.	1875.		1895.	
	Number.	Value.	Number.	Value.
		R.		R.
Bulls and bullocks ...	23,200,000	46,40,00,000	37,100,000	89,04,00,000
Cows	17,100 000	42,75,00,000	27,400,000	76,52,00,000
Buffaloes	9,600,000	52,80,00,000	15,300,000	91,80,00,000
Calves	13,000,000	16,32,00,000	21,800,000	30,52,00,000
Sheep	12,200,000	3,03,00,000	19,600,000	6,37,00,000
Goats	12,000,000	1,26,00,000	18,700,000	2,31,00,000
Horses and ponies	1,300,000	13,00,00,000	1,600,000	32,00,00,000
Mules and donkeys ...	1,300,000	3,90,00,000	1,600,030	6,40,00,000
Total	—	1,80,06,00,000	—	3,34,99,00,000
5 per cent.	—	9,40,30,000	—	16,74,95,000
Divided amongst cattle breeders	—	178,000	—	202,000
Average annual income of cattle breeders	—	528	—	829

TABLE IX.—*Progress in the Wealth of India.*

1	2		3		4		5	
Head.	Number.		Amount.		Per Head of Population.		Increase in 1895.	
	1875.	1895.	1875.	1895.	1875. 188 mlns.	1895. 222 mlns.	Amount.	Per-centage.
			R.	R.	R.	R.	R.	
1. Revenue	—	—	58,89,84,720	98,21,76,490	3·1	4·4	1·3	41·9
2. Excise receipts	—	—	2,49,43,390	5,72,24,170	·133	·258	·119	89·5
3. Stamps ,,	—	—	2,83,53,680	4,72,70,550	·151	·233	·82	54·3
4. Imports, merchandize, excluding re-exports	—	—	37,03,80,000	68,19,59,000	2·0	3·1	1·1	55·0
5. Exports ,, ,,	—	—	56,24,22,000	1 09,59,39,000	3·0	4·9	1·9	63·3
6. Net Import of Gold to date	—	—	£128,962,000	£171,705,000	9·1	10·3	1·2	13·2
7. ,, ,, Silver ,,	—	—	4 03,01,25,000	5 69,24,93,000	21·4	25·6	4·2	19·6
8. Rupee circulation	—	—	1,10,26,80,000	1 64,90,69,000	5·9	7·4	1·5	25·4
9. Paper ,,	—	—	9,98,39,690	24,04,34,550	·53	1·03	·55	103·8
10. Rupee coinage (less re-coinage to date)	—	—	1 76,26,68,000	3,10,0[illegible],96,000	9·4	14·0	4·6	48·9
11. Small coin coinage to date	—	—	9,57,34,000	17,11,22,000	·51	·77	·26	51·0
12. Hoards and ornaments in gold and silver	—	—	4,36,42,27,000	5,76,14,04,000	23·2	26·0	2·8	12·0
13. Salt consumption. Cwt.	17,807,312	25,434,312	—	—	lbs. 10·6	lbs. 12·9	lbs. 2·3	21 7
14. Post office. Letters, newspapers, and parcels	117,852,528	395,672,711	—	—	6·63	1·8	1·17	185·7
15. Packets sent	1,618,393	18,196,529	—	—	·009	·082	—	800·0
16. Value. Postage stamps sold	—	—	37,17,320	1,13,07,790	·02	·051	·031	155·0
17. Money orders	231,907	10,161,107	91,26,620	21,10,19,820	·049	·95	·901	1838
18. Savings banks deposits	—	—	1,89,54,570	10,11,68,990	·101	·46	·359	355
19. Telegraph messages	866,052	4,744,923	21,23,840	71,89,830	·011	·032	·021	191
20. Telegraph capital expenditure to the end of the year	—	—	2,52,07,900	5,88,77,700	·134	·265	·131	98
21. Railways. Miles of line opened	6,523	19,718	—	—	34·7	89·0	54·3	157
22. ,, Passengers carried	26,796,923	153,051,4[illegible]7	—	—	·111	·69	·549	389
23. ,, Goods carried. Tons	4,388,649	24,383,883	—	—	·023	·11	·087	378
24. ,, Gross earnings	—	—	7,31,20,790	26,23,69,060	·394	1·18	·786	200
25. ,, Capital expenditure	—	—	1 00,96,27,560	2,37,23,69,090	5·37	10·69	5·33	99
26. Registered debt	—	—	1,39,16,90,250	2 58,32,72,380	7·4	11·6	4·2	57
27. Debt held by natives	—	—	19,32,54,690	29,72,38,350	1·03	1·34	·31	30
28. Cotton mills. Number and capital	34	147	3,46,74,000	12,63,22,370	·18	·57	·39	217
29. Jute and hemp mills. Number and capital	16	29	2,00,86,000	4,03,08,750	·107	·181	·074	69
30. Woollen mills. Number and capital	0	5	0	35,50,000	—	—	—	—
31. Paper ,, ,, ,,	2	8	11,00,000	62,72,000	·006	·028	·022	366
32. Breweries. Production in gallons and capital	1,060,000	6,238,977	5,10,000	18,00,000	·003	·008	·005	166
33. Collieries. ,, ,, tons	795,000	3,537,820	—	—	—	—	—	—
34. Gold. ,, ,, ounces and value	—	245,767	—	1,72,08,020	—	—	—	—
35. Joint stock industries. Number and paid up capital	397	1,309	12,30,00,000	29,38,72,790	·65	1·32	·67	103
36. Shipping vessels entered. Tonnage foreign trade	2,442,561	4,128,039	—	—	·013	·019	·006	46
37. Education. Number of pupils	163,326	4,303,109	—	—	868·	19383	18·525	2158
38. Value of production	—	—	3,51,58,64,640	5,58,76,43,950	18·7	25·2	6·5	34·8
39. ,, live stock	—	—	1,80,06,00,000	3,34,99,00,000	9·6	15·1	5·5	57·3

6

Remarks.

6. *Gold.*—Estimated stock in 1800 = 30 million £ plus net imports plus production, less 5 per cent.
7. *Silver.*—Estimated stock in 1800 = 90 crores, plus net imports, less 5 per cent.
8. *Rupee circulation.*—Figures taken from "Silver Prices in India." Society's *Journal*, March, 1897. The circulation in 1898 is estimated to have been nearly 170 crores.
9. *Paper circulation.*—Monthly average figures exclude notes held in Government treasuries.
12. *Hoards and ornaments.*—Includes net imports of gold and silver, less rupee and small coin circulations, less holdings in Government treasuries and currency metallic note reserve, less Native States circulation (estimated).
13. *Salt.*—Duty reduced from R. 3·4 and R. 3·0 to R. 2·8 in Bengal and North India, and raised from R. 1·13 to R. 2·8 in Madras and Bombay.
18. *Savings banks deposits.*—Interest, 1875 = 3¾ per cent. ,, 1895 = 3½ ,,
21. *Miles of railway.*—Col. 4 shows number of miles per 1,000,000.
37. *Education.*—Col. 4 gives number of pupils in each million.

TABLE X.—*Land Revenue and System of Tenure.*

1	2	3	4	5	6	7	8	9	10	11	12	13
	1875.						1895.					
Province.	Permanently Settled.		Temporarily Settled.		Total.		Permanently Settled.		Temporarily Settled.		Total.	
	Cultivated Acres.	Revenue.	Cultivated Acres.	Revenue.	Cultivated Acres.	Revenue.	Cultivated Acres.	Revenue.	Cultivated Acres.	Revenue.	Cultivated Acres.	Revenue.
		R.		R.		R.		R.		R.		R.
1. India	170,365	1,14,700	229,635	5,72,690	400,000	6,87,390	170,365	1,14,700	372,270	13,42,410	542,635	14,57,110
2. Bengal	43,264,535	3,28,17,300	4,285,465	50,65,510	47,550,000	3,78,82,810	43,264,535	3,28,17,300	10,176,696	62,34,910	53,441,231	3,90,52,210
3. N.-W. Provinces	3,042,343	44,91,100	17,847,657	3,79,66,350	20,890,000	4,24,57,450	3,042,343	44,91,100	21,542,271	5,48,61,940	24,584,614	6,01,69,440
4. Oudh	305,118	8,16,400	6,754,882	1,32,57,910	7,060,000	1,40,74,310	305,118	8,16,400	8,060,970		8,366,088	
5. Madras	4,816,560	58,32,100	15,883,440	3,96,18,020	20,700,000	4,54,50,120	4,816,560	58,32,100	20,027,580	4,42,63,490	24,844,140	5,00,95,590
6. Assam	171,155	3,78,700	1,278,845	30,81,410	1,450,000	34,60,110	171,155	3,78,700	1,876,617	55,98,010	2,047,772	59,76,710
7. Punjab	—	—	13,650,000	2,00,16,000	13,650,000	2,00,16,000	—	—	17,080,090	2,39,66,990	17,080,090	2,39,66,990
8. Central Provinces	—	—	13,100,000	60,78,850	13,100,000	60,78,850	—	—	15,807,299	76,73,320	15,807,299	76,73,320
9. Lower Burma	—	—	4,800,000	82,36,550	4,800,000	82,36,550	—	—	5,802,777	1,72,79,840	5,802,777	1,72,79,840
10. Bombay	—	—	22,100,000	3,70,61,210	22,100,000	3,70,61,210	—	—	26,979,873	4,87,68,140	26,979,873	4,87,68,140
11. Berar	—	—	5,600,000	67,09,730	5,600,000	67,09,730	—	—	6,720,670	68,13,840	6,720,670	68,13,840
Total	51,770,076	4,44,50,300	105,529,924	17,76,64,230	157,300,000	22,21,14,530	51,770,076	4,44,50,300	134,447,113	21,68,02,890	186,217,189	26,12,53,190
12. Area twice cropped	—	—	—	—	20,000,000	—	—	—	—	—	24,542,811	—
13. Total cultivation	—	—	—	—	177,300,000	—	—	—	—	—	210,760,000	—
14. Incidence per head of population	—	·237	—	·945	—	1·181	—	·2	—	·976	—	1·177
15. Revenue per acre	—	·858	—	1·683	—	1·412	—	·858	—	1·613	—	1·403
16. Permanent at temporary settlement rates	—	8,71,29,038	—	17,76,64,530	—	26,47,93,568	—	8,35,05,133	—	21,68,02,890	—	30,03,08,023
17. Loss to Government by permanent settlement	—	4,26,78,038	—	—	—	4,26,78,738	—	3,90,54,833	—	—	—	3,90,54,833
18. Revenue due at temporary settled rates of 1875	—	8,71,29,738	—	17,76,64,530	—	26,47,93,568	—	8,71,29,038	—	22,62,74,491	—	31,34,03,529
19. Loss to Government	—	4,26,78,738	—	—	—	4,26,78,738	—	4,26,78,738	—	94,71,601	—	5,21,50,339

Value of production, 1875 = R. 3,48,43,11,450
Land revenue at temporary settled rates (Item 16) = R. 26,47,93,568
Percentage = 7·6 per cent.
Loss to Government = R. 4,26,78,738

Value of Production, 1895 = R. 5,53,50,15,720
Percentage at 1875 rates = 7·6 per cent.
Land revenue due at 7·6 per cent. the 1875 temporary settled rate = R. 42,06,61,195
Loss to Government at 1875 temporary settled rates = R. 15,94,08,004

TABLE XI.—*Balance Sheet of British India in 1875 and 1895.*

Head.	Amount.	
	1875.	1895.
	R.	R.
To registered debt—		
In England, converted at average rate of year[a]	55,21,50,000	203,96,69,000
In India	72,70,56,000	102,92,10,000
,, savings banks deposits	1,91,71,000	11,29,69,000
,, other debts in India	5,75,39,000	4,31,96,000
,, capital, cotton mills[d]	3,46,74,000	12,63,22,000
,, ,, jute ,, [d]	2,00,86,000	4,03,09,000
,, ,, paper and wool mills and breweries[d]	16,10,000	1,16,22,000
,, ,, joint stock industries[d]	12,30,00,000	29,38,72,000
,, ,, other industries[d]	2,20,00,000	9,51,52,000
	1,55,72,86,000	3,79,23,21,000
To balance	1,32,31,89,16,000	219,02,52,75,000
Average per head of population of balance	703·8	986·6
Increase per cent.	—	40·2

Head.	Amount.	
	1875.	1895.
	R.	R.
1. By cultivated land, treating the production as representing 3 per cent. on capital value (excluding tea, coffee, indigo, and opium)[b]	113,01,69,18,000	179,08,88,81,000
2. ,, land, cultivable, waste, and fallen land, at one-fifth value per acre of cultivated land[c]	8,86,15,60,000	24,11,77,34,000
3. ,, forest (Government), at 3 per cent. value	9,24,84,000	24,97,79,000
4. ,, opium monopoly, at 3 per cent. value	2,08,42,60,000	1,68,49,94,000
5. ,, value of live stock	1,80,06,00,000	3,34,99,00,000
6. ,, capital expenditure, railways	1,00,96,28,000	2,37,23,69,000
7. ,, ,, ,, telegraph	2,52,08,000	5,88,78,000
8. ,, ,, ,, irrigation	14,07,89,000	32,10,13,000
9. ,, ,, ,, public works[e]	40,00,00,000	80,60,45,000
10. ,, silver coin in circulation[f]	1,19,84,14,000	1,82,01,91,000
11. ,, cash balances, England and India	15,550,93,00	22,60,54,000
12. ,, currency note, metallic reserve	5,65,21,000	21,28,10,000
13. ,, gold and silver, hoards and ornaments[g]	4,36,42,27,000	5,76,14,04,000
14. ,, capital value, production gold, at 3 per cent.	—	57,36,00,000
15. ,, ,, ,, mineral production, at 3 per cent.	17,00,00,000	70,87,56,000
16. ,, ,, on profits of companies, ,, 3 ,, [h]	50,00,00,000	1,46,51,88,000
	1,33,87,62,02,000	2,22,81,75,96,000

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[a] Average exchange rate of rupee in 1875 = 21·645*d.*; in 1895 = 13·638*d.*

[b] Equivalent, at 15 rupees to the sovereign, to 753,000,000*l.* in 1875, and 1,194,000,000*l.* in 1895.

[c] Area, estimated in 1875 = 69,000,000 acres, and in 1895 = 140,000,000 acres.

[d] These figures, as far as possible, are taken from the official statistics. The profits of companies, as deduced from the income tax returns, show that the average interest derived was 7·45 per cent. in 1875 and 7·75 in 1895.

[e] The figure for expenditure on original civil works in 1875 is an estimate, the increase between 1875 and 1895 is half the total expenditure during the period, which includes original works and repairs.

[f] Includes rupees and small coin.

[g] For all India.

[h] The income tax paid on profits of companies in 1895 was R. 11,44,670, equal to an income of R. 4,39,55,648. The income that paid tax in 1886 was R. 2,86,00,000, and R. 1,50,00,000 is accordingly estimated as the income of 1875.

TABLE XII.—*Capital Invested and Income as derived from the Income Tax Returns.*

1 Year.	2 Exchange Value of Rupee.	3 Income Tax, "Profits of Companies."	4 Equivalent at 5 Pies the Rupee to an Income of	5 Capital Invested (so far as is known).	6 Percentage which Income (column 4) is on Capital (column 5).
	d.	R.	R.	R.	
1886-87....	17·441	7,46,200	2,86,51,030	36,57,43,000	7·8
'87-88 .	16·899	7,27,430	2,79,33,310	38,92,75,000	7·2
'88-89....	16·379	9,12,120	3,50,25,410	40,63,50,060	8·6
'89-90 ...	16·566	9,87,490	3,79,19,620	43,07,89,550	8·8
'90-91....	18·089	9,52,980	3,65,79,070	45,05,96,930	8·1
'91-92....	16·733	9,40,880	3,62,22,790	47,94,23,260	7·6
'92-93....	14·984	10,51,520	4,03,78,370	49,47,00,900	8·2
'93-94 ...	14·546	10,27,920	3,94,72,130	52,19,40,230	7·6
'94-95....	13·100	10,43,200	4,00,58,880	53,06,50,650	7·5
'95-96....	13·638	11,44,670	4,39,54,330	56,71,27,610	7·8
'96-97....	14·450	13,18,570	5,03,33,090	62,60,27,300	8·1
'97-98....	15·402	12,08,730	4,64,15,230	66,34,13,290	7·0
'98-99....	15·978	12,96,850	4,97,99,010	71,99,26,370	6·9
'99-1900	16·067	13,29,590	5,10,56,040	76,22,69,000	6·7

DISCUSSION *on* MR. ATKINSON'S PAPER.

MR. WM. DIGBY, C.I.E., remarked, that of the framework and general arrangement of the paper he did not think too much could be said by way of praise. Mr. Atkinson's long and useful service in the Accounts Department of India had made him a master of the art of admirably presenting a series of important financial statements. While praising unfeignedly and with full appreciation the form in which Mr. Atkinson had prepared his paper, he much regretted that he could not say the same of its contents. In his earlier paragraphs Mr. Atkinson referred to the speaker's controversy with Lord Curzon, and, alluding specifically to the area under cultivation, said that in his calculations he had omitted the second crop which is sometimes grown in India. This was true, because the "acreage under cultivation" alone was the subject of comparison. The inclusion of the second crops was not mentioned by the Viceroy, and was only now introduced into the argument. But if the second crop were to be introduced, it must be so brought in with regard to the earlier as well as to the later period. The speaker objected to the years chosen by the author for the purpose of his inquiry. By taking these years, the losses by famine were confessedly ignored, as well as the more recent famines, which he believed had cost the people 300 million £. Everything in the paper turned on the agricultural figures which were submitted. Agriculture was the one industry of India; all other sources of income were comparatively unimportant, and depended upon agriculture for their support, save and except the English enterprises on hillside and in factory. Their market was outside India, and was therefore sure. The yield per acre of the cultivated land in India was the determining factor of the problem. The author's case, therefore, depended on the figures in his fifth table. But the speaker asserted that this did not correctly state the figures it professed to quote. P. 364, "Sixteenth Issue of the Agricultural Statistics of British India," was the authority on which Mr. Atkinson depended. For the Central Provinces he gave 1,200 lbs. of rice as produced on irrigated land, 711 lbs. on non-irrigated; p. 364 shows 670 lbs. for both irrigated and non-irrigated. He quoted for Bombay, where (as also was the case with the Central Provinces), very little rice was cultivated, the impossible average of 1,230 lbs. from non-irrigated; when even Burma, irrigated—Burma, the land of Goshen for rice-growing—showed only 1,054 lbs. On p. 217 he omitted the figures for Bombay and the Punjab as "inaccurate and exaggerated." It was a pity he put them forward at all. It was not quite clear how Mr. Atkinson arrived at the averages for nine crops of 849 lbs. on irrigated land and 553 lbs. on non-irrigated land, which he mentioned on p. 217, line 34. He seemed to have added up these averages, and divided them by 9, without taking into account the respective number of acres there were at, say, 500 lbs. to the acre, and how many (if any) at, say, 900 lbs. per acre. But the speaker argued that the quantities at the respective rates were of the very essence of the argument. He then proceeded to comment on the fact that in the latest number of the "Statistical Abstract," pp. 174 and 175, the returns from so many millions of acres, irrigated and non-irrigated lumped together, of rice and wheat were given at 756 lbs. and 667 lbs. to the acre respectively, and to suggest that on that account figures issued by the India Office were not reliable. The figures which Mr. Atkinson had discarded were founded on experiments in cultivation made by Government officials on selected pieces of land, under circumstances which the average ryot could not possibly secure, and then the whole area of what was supposed to be similar classes of soil were estimated by this hothouse cultivation, and rates being levied accordingly, production was declared to be the sample multiplied so many thousands of times. The absolute worthlessness of such estimates for purposes of calculation were nowhere so strongly demonstrated as in the very Blue Book to which Mr. Atkinson had had recourse. In regard to other estimates made on the crop just before reaping time, there were statistics which were rightly declared to be "on the whole reasonably accurate." An analysis of them made Mr. Atkinson's figures, levied on the sample estimates, ridiculous as well as worthless. To take one example, one page in the authoritative publication on which Mr. Atkinson relied gave the average of wheat production in Berar at 754 lbs. per acre. For the nine years 1891-92 to 1899-1900 the average was under 156 lbs. The highest quantity garnered was in 1893-94, and was 222 lbs. instead of 754 lbs. (see p. 355). If Mr. Atkinson had stopped at the twelfth series of tables, of knowledge of the existence of which he gave no sign, instead of going to the thirteenth, he would have never written the paper. He asserted that Mr. Atkinson had altogether overlooked the quantity which has needed to be allowed for seed, cattle food, and wastage, estimated in 1898 by the Famine Commissioners at:—

	Tons.
Seed	4,213,173
Cattle food	3,199,310
Wastage	3,054,690
Total	10,467,173

Or, one-seventh of the whole estimated production as given by the Commissioners, and one-sixth as given by Mr. Atkinson. Continuing, he criticised Mr. Atkinson's use of the phrase, "that the agriculturists of India obtained" the prices quoted in that connection. Prices were now very much higher than in 1875, to the consequent misery of many millions of people. The author assumed that the agriculturist benefited by the rise in price. But the speaker declared that the chief charges (including those of wages and money-lenders' interest) were paid in kind. The author's figures of value for 1895 was 359,561,475*l.* in sterling, or twice what it ought to have been.

Turning to p. 230, the speaker referred to Mr. Atkinson's statement, that he had assumed that every adult male of above 15 had been continuously employed and received the estimated wage throughout the year. But he went on to say that he had not counted what the women earned, and throwing them in and deducting 5 per cent., he had, no doubt, a fair average! Sir James Caird, after the experience he had gained as a Famine Commissioner in India, estimated that 20 millions of adult males were wanting work for a great part of the year throughout India. He stated that "the waste of energy converted into money value at, say, Rs. 40 per adult per annum, represented a loss of Rs. 820 millions—more than the whole gross revenue of the Indian Empire." This calculation reduced Mr. Atkinson's estimate by 55 million £. Referring to the way in which, as he stated it, Mr. Atkinson had multiplied incomes as set out in the income tax-returns to suit his own notions, he remarked that whilst he arbitrarily raised the incomes of lawyers, vakils, muktears, 300 per cent., and those of shopkeepers but 100 per cent., he increased that returned by the bankers no less than 600 per cent. Why? The speaker urged that if Mr. Atkinson had information to justify his statements, he ought to be placed in charge of the Income Tax Department, to collect the large sums the Government now lost. He strongly animadverted on the method pursued by the author in discussing the value of the property held under the head of hoards and ornaments. For he declared he took the value of the possessions of the whole of India, whether British or not, and divided it by the population of British India only. Table IX seemed to be especially open to criticism, since income was reckoned over and over again. At p. 218 the value of production was put at Rs. 5,393 million, but in this table it stood at Rs. 5,588 million. Land revenue, though taken from the total, appeared as a separate item, as did salt, exported foods, grains, and a part of the receipts for excise and stamps, all of which were paid for by the agriculturist as a consumer, or obtained from the total production. It was a mistake, surely, too, to regard the registered debt of India, or the railway and irrigation debts (most of which was held in England), against some of which there are no assets, as value standing to the credit of the country. In Table XI the assets of the Indian Empire were put at 14,854,500,000*l*. Land, the vast proportion of which did not give a decent living to the cultivator, on which millions pass a penurious existence always, and, on which hundreds of thousands nearly died of starvation, was valued at 33⅓ years' purchase, and recorded as representing in 1895 a sum of 1,194 million £! Waste lands were assumed to be worth one-sixth of this sum, namely, 197 million £. Again, railways, telegraphs, public works (much of this money being sunk in roads, buildings, &c.), were stated at the original capital price, without any deduction for depreciation or for sinking fund. Although this professed to be the balance sheet of British India, the gold from Mysore, a feudatory State, was reckoned as an asset worth 38,240,000*l*. to the Powers, which merely gets what its railways receive as freight in conveying the gold to the sea-board. The opium monopoly was reckoned as worth 112 million £. Surely Mr. Atkinson was reckoning the opium monopoly too highly at 112 million £, since it could hardly be worth thirty years' purchase. Finally, the speaker protested against the publication, under the authority of the Society, of so rosy a view of the state of India, protesting that the welfare and proper taxation of 231 million persons in British India depended on the absence of exaggeration, or over-estimates of that country's income and resources. It was one thing to take Rs. 2 of taxes from an increase of Rs. 36, and quite another to take the same amount from an increase of only Rs. 18. If there had to be any error, it should be on the other side, for exaggeration was certain to bring undue taxation, and also a lessening of effort to make India prosperous. The paper was a model of conciseness. The author's tables were well arranged, but the speaker submitted that he had shown that its conclusions rested on no real basis of fact.

Mr. J. D. Rees, C.I.E., said that in his opinion Mr. Digby had gone too far in his depreciation of the paper, and he would suggest that Mr. Digby's own figures were equally with the author's open to the charge of being framed on an inadequate basis. He agreed with Mr. Digby in thinking that Mr. Atkinson had overstated his case, and thought they must go upon facts over and above statistics, something which was really seen and known. He would not accept, for example, Mr. Atkinson's estimate of an increase in income of 39 per cent. per head in regard to the agricultural population. On the other hand, Mr. Digby's figures were far too low. For if they were correct, some 80 million of the people of India who were alive and well would long ago have been dead. He proceeded to criticise Mr. Digby's remark that we should make British India like other parts of the Empire. That was an absolute impossibility, as other parts of the British Empire were not Asiatic. When they were dealing with their Asiatic Empire they must compare it with such countries as Japan, China, and Corea, and not with Russia and Italy. Supposing the average income of a man in India to be one-tenth of the income of a man in Russia, as Mr. Digby contended, in the case of the latter clothing, food, and lodging cost twenty, thirty, or fifty times as much. Mr. Digby took Rs. 30 as the sum necessary to feed a native of India, and then went on to give away his case by saying it was true they could live in a way on next to nothing. That was the fact; with the little clothing they needed, with no house rent to pay, and with extremely cheap food, they were better off than people in this country, who had to pay 30 per cent. of their income for house rent, another 30 per cent. for food, and 10 per cent. for clothing, and had then little left for other purposes. The true facts about the peasants could only be obtained from reports by local officers who had lived amongst them. None of the statisticians based their conclusions on such a foundation. Mr. Digby said that the raising of prices was prejudicial to the producer, but how could higher prices be otherwise than a profit to the person who sold his produce for such higher prices? In his opinion there had been a fair and reasonable improvement, so far as he could judge from personal experience, in the peasants' condition, and Lord Curzon's estimate of an advance of a rupee or two was probably correct. Again, he did not agree that the money lender was so deadly an enemy to the peasant. He would point out that there was no suggestion by Lord Curzon or by Mr. Atkinson that increased taxation should be levied on the ryots in consequence of the assumed increase in prosperity, Mr. Digby took some exception to Mr. Atkinson's figures because he made allowance for the labour of women and children. It was well known that in India every member of the family assisted. The children earned a little, and the women earned nearly as much as the men, and he submitted that neglect of this factor was a serious omission. After remarking that Sir James Caird's experience of India was of the briefest, Mr. Rees went on to say that the opponents of Mr. Atkinson's view entirely neglected the importance of labour outside regular farming done by most agriculturists in India. There, as elsewhere, there were some months in the year when agriculture was at a standstill. Most of the agriculturists in India were hardly above the condition of daily labourers. Besides working at agriculture, they worked as labourers, and had thus another source of income. It was an exaggeration to say that hundreds and thousands were dying of starvation. The reports from Bombay indeed showed that between 200,000 and 300,000 persons were in receipt of relief. That was a very sad thing, but he wondered whether the people who read of that in the "Times" realised the fact that in the height of the worst famine they had had, the total numbers in receipt of State relief in India was smaller in proportion to the population than the numbers usually relieved in England in ordinary years. [Mr. Digby interrupted with a reference to Raipur.] It was true in that district 40 per cent. of the population was upon relief. But that was an example not of distress upon a great scale, but of relief upon a great scale. The fact was that the whole agricultural population, which was always at one period of the year out of work, then came upon relief. Now, in consequence of our teaching, whenever there was scarcity, and prices reached a certain height, the people came upon relief, and the receipt of relief had ceased to be looked upon as a stigma. Some thought that famines were now more frequent than formerly, but the fact was that in former days they were never noticed unless the people died in vast numbers, and their corpses were lying about the roads. Now we called anything famine which we relieved under the famine prevention code. Nothing was more unjust than to condemn an administration upon the evidence of its own humanity. He, from his personal experience, traversed Mr. Digby's statement as to the relative prices of land in Great Britain and in India. If Indian land was so over assessed, and the whole country was in this parlous condition, land would not sell for so many years' purchase as it invariably did. The whole case for the attack was an exaggeration.

Mr. F. H. Skrine said that the statistics in the paper just read, as well as those proffered by Mr. W. Digby in support of the converse theory as to the condition of British India, made him exclaim with Mercutio—"A plague o' both your houses!" He had once asked a colleague in the Indian Civil Service whether he believed in Indian statistics. "No," was the reply, "I have made too many of them!" In point of fact, the science for the study of which the Society had done so much did not exist in India. Tabulated statements there were in profusion; for the secretariats existed, and justified their *raison d'être* by demanding minute details on every conceivable subject from the over-worked district officers; the latter having no trustworthy mechanism under their control, supplied the ever-growing wants of their superiors as best they could. Thus the basis on which these statistics were founded would not bear examination. Considering the question broadly, "Has the prosperity of India increased under British rule?" the speaker believed that, while certain classes had grown enormously in wealth, the bulk of the population had fewer resources than of yore, and were, therefore, less able to bear the brunt of famine. When he heard the glowing panegyrics of tourists in the peninsula, he was reminded of the celebrated tour undertaken by Catherine of Russia through her southern provinces soon after their conquest. Her favourite, Paternkin, as was well known, ran up temporary villages along the route, and peopled them with imported peasants, whose acclamations convinced the Empress that her new subjects were happy and contented. So the cold weather visitor was deceived by the railway, the factories, and the busy urban life which he saw on all sides, and accepted these paraphernalia as evidence of the unmixed blessings of British rule. In order to learn the facts one must live among the peasantry, study their "short and simple annals," and grasp their economic condition. That it was far from satisfactory, and was actually deteriorating, admitted of no doubt whatever. But the steady growth of a peasant proletariat was not due to mal-administration—rather to the improvidence of the masses, and their reckless multiplication in utter disregard of the means of subsistence. The Government of India was the best and most honest in the world; but it was powerless to control the working of nature's laws. Its very blessings, the peace and order it gave, had produced a state of things which filled him with despair for the future.

Sir **William Wedderburn**, Bart., did not profess to be an expert in dealing with these large figures, and he approached the subject from a different point of view to that of the author. He believed that there was great and increasing poverty amongst the people of India. One point which appeared to him to prove this fact was, that, during this last famine, in the very worst localities, and in the very worst weeks of the famine, there never had been a want of food. The Government report stated that in Guzerat, where there was such great mortality in the Ahmedabad district, there was actually two years' supply of food in the bazaars. Why, therefore, he would ask, should people die of hunger, except through poverty? It seemed to him that the only reason why a man should die of hunger was that he had neither any store himself, nor money to buy it, nor credit to borrow it—when the shops were open and full of food, and he argued, therefore, that people died of hunger owing to excessive poverty, and that, to his mind, proved the poverty of the people of India more conclusively than any groups of figures that they could consider. The money-lender used to advance food to his customers when there was a reasonable prospect of repayment, but now the peasant owed so much to the money-lender—who was also the grain dealer—that he was not willing to advance any more, and that was the reason why the Government was called upon for these gigantic systems of relief. He had nothing to say against the systems of relief; he believed there never was a more humane and perfect system than that which had been adopted, but what he maintained was that the fact that the Government was giving money in payment of relief works instead of food, showed that there had never been any difficulty about food, and that the real difficulty arose from the poverty of the people.

Mr. H. D. **Pearsall** said it seemed to him that estimates of average incomes were worth little, whether they were correct or not. What they really wanted to know was, what was the amount of poverty in India. The truest measure of prosperity, in speaking of any country as a whole, was the proportion of prosperous people, or, conversely, the proportion of people in poverty. The condition of the mass of the people in any country would not be substantially better for the presence of a number of millionaires, although their incomes might largely raise the "average income." What they wanted to know was, not the gross income of the people, but how much of that gross income was left for those who produced it. From his own researches, he believed that he might say that, roughly, in something more than half of India they had the ryotwari system; there the average holding of the peasant was large enough to give him subsistence for his family, with a small margin when he was happy enough to be free from debt—but he rarely was free from debt. On somewhat less than half the land in British India they had the Zemindari system, and it might be said broadly that there the mass of the tenants were pretty well rack-rented, and, therefore, they had in ordinary years but a very small margin above bare subsistence. Besides these two classes of people—both of whom enjoy the use, or the ownership, of land—he found there was an enormous number of people in India at the present time who were agriculturists, and entirely dependent upon agriculture for their living, but who were entirely landless. He estimated their number at 30 millions, perhaps 40 millions, and he believed that this class—which was always the one whose margin of subsistence was barest—had been increasing in India during the last fifty years. It was this class which was the first to come on famine relief. The growth of this class was perhaps the fact of most evil omen for the future prosperity of India.

Mr. J. BARR ROBERTSON remarked that at that late hour he would not detain the Fellows with any remarks of his, but that he would furnish the Secretary with a note he had made of certain slight corrections needed in the paper.

The CHAIRMAN (Mr. E. W. BRABROOK, C.B.) remarked, in closing, what he characterised as a very interesting discussion, that it was rarely that they had had the extreme views on both sides of the question presented so clearly and fully as they had had them on that occasion. Both sides had adopted rather more of a tone of advocacy than they were accustomed to in that room, both in the treatment and criticism of the paper. The pessimistic views of Mr. Digby, and the too optimistic expressions of the author were, he imagined, a little way from the real actual facts of the case; but both the paper and the discussion had been very instructive. One thing he must say, that the paper, whatever its defects might be, had the quality of perfect frankness and truthfulness. Mr. Atkinson revealed his method of statistics, and did not attempt to impose upon them his own mere estimates as being facts. Mr. Atkinson gave them chapter and verse for all that he said, and said frankly, "I feel that this is not true; therefore I assume this and this and this," and he allowed his audience to accept that as his assumption, and that attitude went very far, he thought, towards redeeming the paper from some of the criticisms which had been expressed with regard to it. He would therefore move that the thanks of the Society be given to the author, who had devoted so much labour and skill to the preparation of the paper, as even Mr. Digby had been candid enough to acknowledge.

The vote of thanks was unanimously passed.

The following reply has since been received from Mr. Atkinson:—

I much regret that I was not present in London to personally read my "Review on the Income and Wealth of India," and to reply to the criticisms made on it in the discussion that followed. I have now been allowed the privilege of replying in a note, and will do so as briefly as possible.

It was obvious that Mr. Digby would disagree with any statistics which showed that India was in a state of economic progression instead of retrogression, but I thank him for the generally friendly spirit he appears to have shown during the course of his remarks. He was bound to oppose the doctrine the paper enunciated, but the only point of any importance attacked by him was the "Yield per acre." Many other points of great importance, such as the increase in wages, and the extensive benefits of irrigation, he left untouched, and I trust that this is a sign that the publication of this paper, with its statistical and scientific deductions, has more than half convinced him, and those that think with him, that India is not in such a deplorable condition as he would have the world to believe.

Dealing with his criticisms, he first objects to the years selected for the purposes of the inquiry, because "the losses by famine were confessedly ignored." This is true, but under what other conditions could a fair and honest comparison be made? Since 1896 India has been singularly unfortunate in regard to its rainfall, and a comparison between, say, 1880 and 1900 would be equivalent to comparing a man's strength after an attack of measles with his strength after an attack of enteric. The obvious object of my paper was to make the comparisons between two *normal* years, and thus ascertain the true progress of the country by eliminating all extraneous conditions, for which neither man nor the Government of the country are in any way responsible. India has the most marvellous recuperative powers, and it is probable that, even after the successive years of short rainfall from which she has suffered, a couple of years of normal rainfall would enable her to make a complete recovery and a rapid return to economic progress.

Mr. Digby next remarks that the yield per acre is "the "determining factor in the problem," and proceeds to argue that the figures given by me are grossly exaggerated. It is not easy to follow the argument as offered, but it would seem that he appears to think that either the India Office Blue Book, or my figures, or both, are founded on Government experimental cultivation, but in this, so far as my figures are concerned, he is quite mistaken. I think he will find, on inquiry, that the Government does not keep up experimental farms in half the districts of India. To prove that my figures are "ridiculous as well as worthless," he examples the case of Berar, which in one table of the Blue Book gives a wheat yield of 754 lbs. per acre, and in another table 156 lbs., or in a bumper year, 222 lbs., and he at once assumes that the 754 lbs. table is wrong, and the 156 lbs. table correct. He evidently intends to show, on the analogy of this example, that the all round average yield of 753 lbs. per acre estimated by me for 1895 (see Table II) should more correctly be 156 lbs.! But does he realise what this means? It means that the very moderate allowance of 1·74 lbs. per diem per head of population estimated by me as the food retained in India during 1895, which includes seed, wastage, and cattle food, would be reduced *to less than one-third of a pound a day!* When Mr. Digby sees his figure thus worked out to its logical conclusion, he will, no doubt, admit that he was in error. I may add that some years ago I personally carried out some amateur farming on a very small scale, and my experience is that without water, without manure, without any care, and in an ordinary soil, a yield of 754 lbs. per acre is far from being an exaggerated estimate.

Mr. Digby next doubts that the agriculturist benefits by high prices, because their chief charges are paid in kind. Mr. Digby is probably thinking of the general practice in India some thirty years ago, but railways have changed all this, money is now used as the medium of exchange over hundreds of square miles where barter and payment in kind at a fixed rate were formerly the custom, and in vast parts of India, even where payment is still made in kind, the market price of the commodity regulates the quantity to be delivered in payment of the debt. Mr. Digby does not appear to have kept time with the increase in civilization throughout the country, and if he would make a few inquiries from Messrs. Ralli Brothers he would find that the agriculturists throughout India are as alive to the market value of their crops as are the numerous astute agents themselves.

In regard to the criticisms on the averages of the yields worked out, I think that on a reconsideration Mr. Digby will find that my figures are mathematically correct.

Mr. Digby's criticisms in Table IX are not clear. The table is intended to show the progress of the wealth of India in each of the heads enumerated *separately*, and each item should therefore be read by itself. The reason why the value of production is entered as 5,588 millions in Table IX, and 5,393 millions on p. 218 is explained by Table II. The Indian debts, railway, irrigation, and registered, are certainly not assets, but they are entered in the table to show the progress of the country at the hands of the Government, and every penny spent, as this debt was spent, added to the wealth of the country, as well as to its civilization, and the indirect benefits derived added as much, or even more largely, than the direct. But this is an economic question too lengthy to discuss here.

Mr. Rees followed Mr. Digby, and with the remarks he made regarding the excessive humanity of the present administration of India I entirely agree. The Indian agriculturist is unemployed for many months in each year, and in many cases when he obtains a chance of earning money by attending relief works, he will ordinarily do so, whether there is any necessity or not. It is my belief, which is shared by many who have studied the question, that if the relief system now in force had been in force during the prosperous years from 1880 to 1895, the numbers that would have attended would not ordinarily, during the non-agricultural months of the year, have been proportionately much fewer than during some of the recent years, or say, than the number now being granted relief.

Mr. Rees, as well as those who followed him, expressed the opinion that my figures overstated the case, and would not accept my estimate of 40 per cent. increase per head of agricultural income. In reply, I would ask these gentlemen to analyse my figures, and ascertain what was the main cause of this increase. Briefly it may be stated thus:—

	Per Cent.		Per Cent.
Increase in population	18	Increase in yield per acre	4
„ cultivation	15·4	„ price	30

Thus we find that the increase in the population exceeded the estimated increase in the area cultivated. The latter increase cannot therefore be regarded as exaggerated.

The increase in the yield per acre is shown as 4 per cent. only. When the large amount expended on irrigation is considered, and it is remembered that the agriculturists voluntarily pay for the use of the water even in prosperous years, it is evident that the average yield must have increased considerably, and the paper shows that the estimate is a very moderate one. An increase in price therefore alone remains, and this is an absolute fact. Rupee prices in India were worked out by me on the same lines as Mr. Sauerbeck's gold prices, for a long series of years (the prices brought up to date will appear in an early number of the *Journal*), and the figures in many cases of prices in different localities were tested by me by means of the kind assistance of Messrs. Ralli Brothers, and I can confidently state that the index-numbers given for each commodity fairly represents the true variation in prices each year. Thus it would seem that the main cause of the increase in the income of the agriculturist in 1895 as compared with 1875, was the increase in the rupee price of his crops; this rise was about 30 per cent., and if Mr. Rees's estimate of increase approximated 11 per cent. only, if follows that in his opinion the increase in the population must have vastly exceeded the additional area cultivated during the period, and that the yield per acre remained practically the same, or less, which means that the agriculturists have been spending more money each year in irrigation for no results.

It is not intended to insinuate that the rise in prices was entirely due to the action of the Administration, though no doubt it unintentionally was to some extent; it was mainly due to various economic causes too lengthy to discuss here, but, briefly, it may be said that the principal cause was the open mints of India to the free coinage of silver, which caused the circulation of the country to become redundant, and thus forced prices to rise. From this it may be argued that open mints were a blessing to India, and that the Government action in closing them and fixing a gold standard was a reprehensible measure. But those who argue thus forget that there must necessarily always be a limit to everything, after which good may be turned into evil, and there were potent signs that that limit had been reached at the time the Government took action in the matter, and the Government showed its wisdom and interest in the welfare of the people of the country in fixing the standard at 16*d.* to the rupee, instead of at its original price of 24*d.*, which was perfectly possible.

In conclusion, I beg to express my thanks to the Chairman for his kind remarks in closing the discussion, and to those present for the vote of thanks passed.

FACTORY LEGISLATION, *considered with reference to the* WAGES, *&c.*, *of the* OPERATIVES PROTECTED *thereby.*

By GEORGE HENRY WOOD.

[Read before the Royal Statistical Society, 15th April, 1902. The Right Hon. Lord AVEBURY, P.C., F.R.S., D.C.L., LL.D., President, in the Chair.]

CONSIDERABLE controversy has risen from time to time over the effects of Factory Legislation on the operatives coming within the operation of the various Acts; but so far as I am aware, no statistician has collected the available material and examined it with the view to eliciting from it replies to the questions which may be appropriately put, and though I am not ambitious enough to believe that I can throw new light on the subject, the hope that a useful purpose may be served by bringing the material together, must be my excuse for offering to the Statistical Society the present paper.

It is not, however, my purpose to write either a history of Factory Legislation or of women's wages. Nor do I propose to discuss the merits or deficiencies of any particular Act, or to consider as an abstract question the interference of the State with conditions of labour. My position to-day is that of the statistician, examining a series of legislative events in the light of the statistics of the question, with the view to discovering the connection, if any, between these events and the position of the operatives affected thereby.

It is necessary to take a preliminary glance at the changes made by the successive Factory Acts, and to save space and facilitate reference, I have tabulated the chief points of each, as follows:—

*Successive Changes Introduced by Factory Legislation.**

(C. = children; Y.P. = young persons; W. = women.)

Date.		Industries Affected.	Operatives Affected.	Details.
1802	—	Cotton	Apprentices	Hours not to exceed 12 per day. Night work temporarily allowed during certain periods in mills with 1,500 spindles and upwards. Limits of day, 6 a.m. to 9 p.m.
'19	59 Geo. III, c. 66	„	Children	Minimum age 9 years. C. 9–16 years limited to 12 hours a day.
'25	6 Geo. IV, c. 63	„	„	Saturday's work limited to 9 hours. Cease at 4.30 p.m. Weekly hours 69. Day from 5 a.m. to 8 p.m.
'31	1 and 2 Wm. IV, c. 39	„	C. 9—13 years Y.P. 13—18 years	Prohibited night work for all Y.P. 9—21 years, and limited time for all under 18 years to 12 daily and 9 Saturdays. (69 weekly.)
'33	3 and 4 Wm. IV, c. 103	Textiles	C. and Y.P.	Hours for C. limited to 9 daily, 48 weekly. For Y.P. weekly hours 69. Daily from 5.30 a.m. to 8.30 p.m. Extension to textiles.
'44	7 and 8 Vic., c. 15	„	C., Y.P., and W.	Introduction of half-time system for C., only to work 6½ hours daily, or 10 hours for three alternate days; women to work same hours as Y.P., viz.: 12 daily, 69 weekly. Day from 5.30 a.m. to 8.30 p.m. Saturdays to 4.30 p.m.
'45	8 and 9 Vic., c. 29	Printworks	„	Extension to printworks.
'47	10 and 11 Vic., c. 29	Textiles	Y.P. and W.	The "Ten Hours" Act. Hours reduced to 11 daily and 63 weekly from 1st July, 1847, and to 10 daily and 58 weekly from 1st July, 1848.
'50	13 and 14 Vic., c. 54	„	„	Hours 10½ daily, 60 weekly. Day from 6 a.m. to 6 p.m., or 7 a.m. to 7 p.m., and 2 p.m. Saturdays.
'53	16 and 17 Vic., c. 104	„	Children	Limits of day of 1850 Act applied to C. Previous limits 5.30 a.m. to 8.30 p.m.
'60	23 and 24 Vic., c. 78	Bleachings and dye works	C. 8—13 years Y.P. 13—18 years W.	Extension to bleaching and dye works, except bleaching in open air. Day from 6 a.m. to 8 p.m. (12 hours), and 4.30 p.m. Saturdays.
'61	24 and 25 Vic., c. 117	Hosiery and lace	„	Youths 16–18 allowed to work for 9 hours between 4 a.m. and 10 p.m., others regulated according to 1850 and 1853 Acts.
'64	27 and 28 Vic., c. 48	See details	C., Y.P., and W.	Extension to certain non-textile industries, e.g., fustian cutting, cartridge making, pottery, &c.

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* In compiling this tabulation, and in several other cases, I am obliged to Miss Amy Harrison for much assistance she has kindly rendered me. Miss B. L. Hutchins has also supplied me with useful references. Both have aided me with notes, material, and criticisms.

Successive Changes Introduced by Factory Legislation—Contd.

Date.		Industries Affected.	Operatives Affected.	Details.
'67	30 and 31 Vic., c. 103	Workshops	C., Y.P., and W.	Extension of Act. Factory to mean any premises constituting one trade establishment in which 50 or more persons are employed in any manufacturing process. A very large number of industries first brought under the law.
'67	30 and 31 Vic., c. 146	„	„	The "Workshops Regulation Act." C. under 8 prohibited; C. 8—13 years, 6½ hours a day between 6 a.m. and 8 p.m. Y.P. and W., 12 hours between 5 a.m. and 9 p.m. Saturdays 2 p.m. Sunday work prohibited.
'70	33 and 34 Vic., c. 62	Print works, bleaching, and dye works	C. and Y.P.	Open air work regulated.
'71	34 and 35 Vic., c. 104	Brick and tile works	„	C. under 10 years and females under 16 years prohibited.
'74	37 and 38 Vic., c. 44	Textiles	C., Y.P., and W. (10—13 years) (13—18 years)	C. under 10 forbidden. Hours 10—13 years as before, but not to be employed on Saturdays if employed for more than 5 hours in any day during the week. Hours reduced 60 to 56½. 1st January, 1876, minimum age for full timers raised to 14 years, unless "evidence of proficiency" is produced.
'78	41 Vic., c. 16	„	C. 10—13 years Y.P. 13—18 years W.	Hours for C. 6½ per day, or 10 hours for three alternate days. Day to extend from 6 a.m. or 7 a.m. to 1 p.m., or 1 p.m. to 6 p.m. or 7 p.m. End on Saturdays at 1 p.m.
		Non-textile	„	Regulations for C. same as textile, but end on Saturdays at 2 p.m. Hours for Y.P. and W. 10½. 6 to 6, or 7 to 7, or 8 to 8. Saturdays 2 p.m. (In some cases 9 a.m. to 9 p.m.)
		Workshops	C. 10—13 years Y.P. 13—18 years	Workshops in which C. or Y.P. are employed, hours to be as non-textile factories.
		„	W.	Workshops conducted on the principle of not employing C. or Y.P. Hours 10½ per day, 6 a.m. to 9 p.m., and 4 p.m. Saturdays.
		Domestic workshops	C. and Y.P.	Conditions to be as non-textile factories, but end at 4 p.m. Saturdays. Women's hours unregulated. Y.P. 10½ daily between 6 a.m. and 9 p.m. Saturdays 6 a.m. to 4 p.m., with 2½ hours for meals.
'91	54 Vic., c. 75	„	C.	Minimum age for half timers raised from 10 to 11 years.

In these successive Acts we note the following important developments. The early Acts were for children only, and between 1819 and 1825 their hours were reduced from 72 to 69. In 1833 young persons between 13 and 18 years were protected, first in the cotton and then in all textile industries. Their hours were also reduced to 69. In 1834 inspectors were appointed, and efficient administration of the Acts commenced. The Act of 1844 had a wider scope, reducing the hours of children to 30, and extending the regulation of hours to women. The Saturday half-holiday was also inaugurated. This, however, was only considered by the operatives as a step towards the ten-hours day, and in 1847 the Act was passed which they thought secured for them this desideratum. It was not successful, however, because the limits of the legal day exceeded the ten hours, and led to a system of relays which made the Act difficult to enforce. A compromise in 1850 removed these abuses, and the hours were fixed at 60.[1] This Act was important, because a "normal working day" was established, *i.e.*, the hours of legal employment and meal times were made to coincide with the number of hours in the working day, and so it became impossible to employ relays. A far more efficient administration than had obtained before dates from this Act. Comparative finality was reached in the question of hours in 1853, when the children, omitted in the Acts of 1847 and 1850, were specially legislated for. For some years there was a process of extension, until many persons were, in 1864 and 1867, brought within the protection of the law. The next far reaching Act was that of 1874, which reduced the hours in textiles to 56½ per week (at which they remained until 1901, when they were reduced to 55½). In 1878 the previous Acts were consolidated, in 1883, 1891, and 1895 amendments were made, and in 1901 these Acts were repealed, and the code of Factory Legislation consolidated in the Act of that year.[2]

How these Acts might affect Wages.

The most direct way in which these Acts might be expected to have affected wages would be through the reduction of working hours. Less directly, they imposed restrictions on the conditions under which the operatives might be employed, and these restrictions might be expected to hamper production by raising its expenses. Indeed, the effects of Factory Acts would be expected to be somewhat as follows:—[3]

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[1] They might have been 60½. The Act does not mention weekly hours, but 60 seem to have been worked.

[2] See Abraham and Davies, "The Law Relating to Factories and Workshops." 4th edition, 1902. Eyre and Spottiswoode.

I. Reduction of wages through the reduction of hours;
II. Increased expenses through improvements in factories to meet the sanitary and other requirements;
III. Increased standing charges (such as rent and interest) relative to the amount produced, through the machinery working less hours in a given period than before, thus raising the expenses of production;
IV. Rise of prices, through II and III; causing
V. Lessened demand for goods, especially by foreign customers; causing in turn
VI. Restricted employment and consequent increase of unemployed;
VII. Displacement of the children, young persons, and women, protected under the Acts, by male adults of 18 years and upwards who were not protected.

If wages were so reduced as not to cause II, III, IV, and V, we might expect to find an

VIII. Increase in the number of operatives employed per unit of quantity produced.

As only the first, fifth, and seventh of these "effects" can be adequately dealt with statistically, it is to these I propose to direct your attention, and even then I shall only attempt to treat the first and seventh in detail. Incidentally some light may also be thrown upon the others.

At the commencement some distinction must be made between the immediate and the permanent (or at least, deferred) effects of Factory Legislation. It is not easy to trace either of these, as other conditions may cause changes to take place which obscure the operation of the Acts. The immediate effects may be seen, if we have evidence of the numbers and earnings of the operatives immediately before and after the date of the introduction of the changes demanded by a particular Act, but the abiding effects will have to be considered in relation to the operation of such forces as a change of prices, wars, strikes, fashion, and the like. Generally speaking, and *if other things are equal*, the difference in the rates of wages, and in the relative numbers employed between those obtaining immediately prior to the operation of an Act, and those obtaining three or four years after, may be considered as due to its action. Unfortunately in no case are these other things equal.

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[3] Senior, "Letters on the Factory Acts," p. 8. "Any plan, therefore, which "should reduce the present comparatively short hours (69 per week in 1837) "must either destroy profit, or reduce wages to the Irish standard, or raise the "price of commodity by an amount which it is not easy for me to estimate."

Jevons, "Primer of Political Economy," p. 64. "If factories, then, produce "less goods in 9 hours than in 10, *as they usually do*" (italics mine), "there "cannot, in the long run, be so much wages to receive."

Turning first to the question of wages, I propose to examine, in the industries for which I have been able to procure the necessary data, the earnings of the protected workers before and after the passing of each Act affecting them. This part of the work will be somewhat piecemeal, but in returning to the question of wages, after considering other features, I have combined the material into a series of index-numbers of wages of women and girls, that comparison may also be instituted over longer periods.

Scope and Amount of the Data.

For the special purpose of comparing wages before and after the passing of the several Acts, it is obviously necessary that the estimates should be strictly comparable, and it is therefore desirable that they should be made by the same authority. For the larger purpose of calculating index-numbers of wages we are not so closely tied to the use of strictly comparable estimates, since the errors involved tend to balance each other, and though all the index-numbers necessarily have error, they are given as those which most closely satisfy the evidence. Hence, for my earlier purpose, I shall quote only wages estimated for two or more years by the same authority, and am, accordingly, limited in the amount of useful data. My chief authorities are, the "Reports "of the Factory Inspectors;" the "Returns of Wages, 1830-86;' and a useful little book by G. P. Bevan, entitled, "Industrial "Classes and Industrial Statistics," 1876, volume, "Textiles, &c." For the index-numbers many more authorities have been consulted, notably, Felkin's "Hosiery and Lace," 1867 and 1877; Ure's "Cotton Manufacture," and the "Philosophy of Manufactures;" A. L. Bowley's "Wages in the United Kingdom," 1900, and his paper in the *Journal of the Royal Statistical Society*, June, 1895; the "Reports of the Labour Commission," especially those of the Lady Assistant Commissioners on Women's Employments; and Miss C. E. Collet's report to the Labour Department on "Changes in the Employment of Women and Girls" (C–8794, 1898); and the annual reports of the Department on "Changes "in Wages and Hours of Labour," 1893-1901. The Webb collection of manuscripts and trade union documents, in the British Library of Political Science, is particularly rich in wage statistics, and is invaluable to all students of nineteenth century social history. An exhaustive bibliography of wage statistics, by Mr. A. L. Bowley and Miss A. Hopkinson, will be found in the "Economic Review," October, 1898, and a large number of publications mentioned therein will be found to contain statements of women's wages.

Not to unduly burden the text with tables, I have adopted the plan of placing in the Appendix all the material not absolutely necessary for illustration of the course of events.

The Earlier Acts.

In relation to the earlier Acts, our material is very insufficient. In Glasgow, in the cotton mills, "before the restrictive Acts of "1818-19,"[4] the hours were 12½ daily, and from that time until 1831 (and perhaps later) they were only 12 daily. "The wages" of children "did not vary during the ten years preceding 1820, "and very little"[4] after that time until 1831.

The Act of 1833 reduced the hours for children from 69 to 48 weekly, and applied to all textiles. Its effects on the earnings of children in the cotton trade at Oldham, if we may judge by the following table,[5] were to raise their wages:—

Wages in the Cotton Trade, Oldham.

	May, 1833.	1836-37.	1841.
	s. *d.*	*s.* *d.*	*s.* *d.*
Cardroom scavengers	4 6	5 6	5 6
Drawing frame tenters	8 –	9 –	9 –
Coarse bobbin „	4*s.* 6*d.*, 8*s.*	6*s.*, 8*s.* 6*d.*	6*s.*, 8*s.* 6*d.*
Jack frame „	11*s.*, 12*s.*	12*s.*, 13*s.* 6*d.*	12*s.*, 13*s.* 6*d*
„ „ assistants	3 –	4 6	4 6
Calico weavers	15 –	15 –	12 4½
„ „ assistants	3 6	4 –	4 –
Fustian „	13 8	13 6	13 6
„ „ assistants	4 3	4 9	4 5
Piecers, 9—13 years	3 –	4 –	2 9 half-time
„ 13—17 „	5 –	6 3	5 6
„ over 17 „	8 4	10 3	8 9

The cotton trade was in a depressed condition in 1833, and prosperous in 1836, so it is possible that the changes in earnings here recorded were due to the revival of trade, and not the results of the passing of the Factory Act.

In the "Report of the Commission on the Hand Loom "Weavers,"[6] it is stated that no change took place in the wages of the operatives (men, women, and children) in the south-western woollen district between 1828 and 1838. I have been unable to find any evidence relating to the other textiles.

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[4] "Returns of Wages," p. 13.

[5] "Factory Inspector's Report," 1841, xxii of 1842.

[6] "Hand Loom Weavers," 1840, Part II, Report by A. Austen.

The Act of 1844.

In some respects the Act of 1844 is the most important we shall have to consider. Previous legislation had only been for children up to 13 years of age, but the regulations were now made for young persons of both sexes (13 to 18 years) and women. Again, our chief material relates to the cotton trade, and consists of a statement of wages for Manchester, 1840 to 1845:—[7]

	1840.				1841.				1842.			
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Throstle spinners	8	6	11	–	8	–	10	–	8	6	10	–
Piecers	6	–	10	–	6	–	10	–	6	–	10	–
Scavengers	2	6	5	2	2	6	5	4	3	–	5	2
Card room, Y.W.	7	6	12	–	7	6	11	8	7	6	10	–
„ children	3	–	6	–	3	–	6	–	3	–	6	6
Power loom weavers	11	1	14	2	10	2	14	2	9	10	14	2
Reelers	6	–	9	–	7	5	9	–	7	7	9	–

	1843.				1844.				1845.			
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Throstle spinners	8	6	10	–	8	6	10	–	9	6	10	6
Piecers	6	–	10	–	7	–	10	–	7	6	10	9
Scavengers	3	–	5	2	3	–	5	8	3	6	5	6
Card room, Y.W.	7	6	10	–	8	–	10	–	8	–	11	–
„ children	3	–	7	–	4	–	7	–	4	6	7	–
Power loom weavers	9	3	14	2	9	4	14	2	11	3	14	2
Reelers	6	8	9	–	5	10	9	–	7	6	9	–

There was little change in the prosperity of the trade immediately after 1844, so the increase of wages shown in the above table to have been general for female workers cannot, as in the case of the Act of 1833, be ascribed to trade expansion. The evidence shows, therefore, that in this instance the reduction of the working week from 72 to 69 hours did not reduce the earnings of the operatives. The table from the "Returns of Wages," given at p. 294,[8] substantiates the conclusion.

Again we are without material for other trades, and it may have been that wages fell in some of these. The depression of trade which set in very soon after this Act was passed vitiates any comparisons such as might be made with the tables given in the "Returns of Wages" for 1839-49.

Further, the Act of 1844 was soon followed by that of 1847, and we may conveniently pass at once to its consideration.

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[7] Macculloch, "Statistical Account of the British Empire," 1846, vol. i, p. 696.

[8] Averages, fine yarns, Manchester.

The Ten Hours Act of 1847.

This, for our purpose, is the most important of the whole series, for it was the result of a long agitation, and although it only actually applied to women and young persons, it resulted, with the Acts of 1850 and 1853, in reducing the hours of all textile workers.

Unfortunately, the effects of the 1847 Act are obscured by a trade depression more severe than that which attended the coming into operation of any Act of the series. We are, therefore, unable to be sure regarding its effects. Its importance, however, makes it necessary that we should examine them in as much detail as possible.

The hours before and after the Acts of 1847 and 1850 were:—

	Hours before 1847.	1st June, 1848.	1850.
Children	6½ daily, 30 weekly	Same	Same
Young persons Women	69 weekly	58 weekly	60 weekly

The limits of the working day were not changed by the Act of 1847, and this omission led to the passing of that of 1850, wherein they were to be from 6 a.m. to 6 p.m. or 7 a.m. to 7 p.m. and 2 p.m. Saturdays. Children were not affected until 1853, when the limits of their day were made the same as for young persons and women.

The Act of 1847 was evaded by means of the relay system, and even that of 1850 was not thoroughly enforced until the children were included in 1853. Our comparison of the probable effects should be between 1846 and 1853 or 1854, but it will aid us if we can arrive at conclusions respecting its immediate effects.

Leonard Horner, the factory inspector, made direct inquiries of the operatives over the whole of the Lancashire district, with the object of finding what were the opinions of the operatives as to the Ten Hours Act, *i.e.*, whether they would prefer a 10, 11, or 12 hours day, and he therefore inquired about wages. He wanted to know whether, supposing there had been a reduction, they preferred a 10 hours day with less wages, to the original day with the higher wages. His method was to select, indiscriminately, operatives in various mills he visited, and question them. But, although he selected indiscriminately the operatives he interrogated, "if any were not receiving less than they would do were "they working 12 hours," he "did not carry the conversation "further."[9] Hence we have recorded only the replies of those whose wages were reduced. Horner's method was right if he had recorded all the replies, for, short of a complete wage-census, samples taken at random will usually give the best approximation to the actual facts. The questions asked were, "What were they "getting for 10 hours, and what would they get, at the same rate, "if they worked 12 hours?"[9] The following are samples of the replies:—

	Getting for 10 Hours' Work.	Would get for 12 Hours' Work.		Getting for 10 Hours' Work.	Would get for 12 Hours' Work.
	s. *d.*	*s.* *d.*		*s.* *d.*	*s.* *d.*
Roving frame tenters	8 5	10 –	Jack frame tenter	8 8	10 6
	7 11	9 8	Throstle frame tenter	7 4	9 –
Weavers	8 9	10 –	Bobbin tenter	9*s.* to 10*s.*	12*s.* to 13*s.*
	7 –	8 –	Card frame tenter	8 –	9 6
	12 6	15 –	Mule piecers	7 –	8 6
	9 6	11 –		9 –	10 –

There seems no room to doubt that some of the operatives themselves believed that wages had fallen through the "Ten "Hours" Act, but it is doubtful if, at any time, the reduction from this cause equalled 16 per cent., the amount of the legal reduction of hours. There were reductions in piece rates in 1847 due to bad trade, and generally amounting to 10 per cent. The condition of trade in 1846-49 is the most important feature of the whole question, and I have given in the appendix some evidence relating to the matter. To show how difficult it is to sift the evidence and decide whether or not the Act did reduce wages, the following actual replies to Horner's questions may be cited:—[10]

No. 231.	Weaver	"Is working 10 hours; earns 9*s.*; if working "12 hours would earn 10*s.* 6*d.*"
" 223	"	"Works 10 hours; earns 8*s.* 6*d.* to 9*s.*; if "working 12 hours would earn 10*s.* 6*d.*"
" 176.	Single woman, 19, weaver	"Works 8 hours; earns 7*s.*; if working "12 hours, 10*s.*"
" 178.	Weavers' overlooker	"Working 8 hours; earns 20*s.* to 21*s.*; if "working 12 hours, 30*s.* Is greatly in-"jured by the short time of working."

This "short time of working" cannot have been due to the Act, but its existence makes the whole of the evidence doubtful for our purpose, and perhaps the best evidence is to be found in the following statement of the average earnings of the whole of the workers in certain mills:—

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[9] "Factory Inspectors' Reports," xxii of 1849, p. 144.

[10] *Ibid.*, pp. 15—200.

Cotton, Manchester.[11]

	Average Earnings per Head in two Mills.				Notes to (*b*).
	(*a*) Fine Yarns.		(*b*.)		
	s.	*d.*	*s.*	*d.*	
1844	10	4¼	—		
'45	10	10¼	—		
'46	10	3	10	–	12 hours a day.
'47	10	9¾	8	4¼	Only 4 days a week, trade bad.
'48	10	3¼	8	2	
'49	9	10½	9	4	Upon the half-year, 11 hours a day.

Here there is an undoubted fall after 1847, but it is not even equal to the 10 per cent. reduction of piece rates, let alone the 16 per cent. reduction in hours. This would lead to the belief that the "Ten Hours Act" caused a slight reduction of earnings, but that this reduction was only temporary. The following evidence respecting weavers' earnings substantiates this view:—

In his report for 1850,[12] L. Horner again discusses the effects of the reduction of hours. Thirty-one weavers, working 65 looms, had earned:—

	1845. 69 Hours. 142 Picks per Minute.				1848-49. 58 Hours. 148 Picks. 10 per Cent. Reduction.		
	£	*s.*	*d.*		£	*s.*	*d.*
7th June	19	1	11½	1848 4th November	15	16	10½
14th "	18	6	3½	11th "	15	10	4
28th "	18	3	1½	18th "	15	15	10½
5th July	17	17	3½	25th "	16	2	6½
1st November	17	18	11½	1849 12th May	16	15	9½
8th "	17	19	2½	19th "	16	15	10½
15th "	18	2	1½	23rd June	16	12	11
22nd "	18	–	6½	30th "	17	–	10½
Total 8 weeks	145	9	6		130	8	4
				Allow for reduction (*sic*)	13	–	9½
					143	9	1½
Average earnings per week	–	11	8	Average earnings per week	–	10	6

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[11] "Returns of Wages," p. 12.

[12] "Factory Inspectors' Reports," xxiii of 1850, p. 184.

Horner's comments on the figures are that if 69 hours gave 145*l.*, 58 should give 121*l.*; but, allowing for the reduction of 10 per cent. (which he does by adding 10 per cent. only to the second total), we get 22*l.* more, and of this, 5*l.* comes by the increased speed and 17*l.* by closer application.

These figures repay closer examination. If we take away the 10 per cent. reduction, the average for the eight weeks in 1845 is 10*s.* 6*d.*, the same as in 1848-49, and there is no room for any reduction from the lessening of hours. The combined reductions are $\frac{1}{10} + \frac{11}{69}$, or 26 per cent., and the losses actually suffered, taking the average of the eight weeks of 1845 as our basis, are:—

1848.				1849.			
4th November.	11th November.	18th November.	25th November.	12th May.	19th May.	23rd June.	30th June.
Per cent. 13	Per cent. 14·5	Per cent. 13·2	Per cent. 11·3	Per cent. 7·6	Per cent. 7·6	Per cent. 8·5	Per cent. 6·4

The margin grows less in 1849 than in 1848, until it becomes not only less than the amount expected from the reduction of hours, but less than the 10 per cent. reduction in piece prices. The reason has already been mentioned above, *i.e.*, the increased efficiency of machinery and worker. The machines were speeded by $\frac{1}{24}$, so that it is a matter of simple arithmetic to calculate the value to the weaver of the "closer application" made possible by increased personal efficiency.[13]

We meet with similar effects of reduced hours in other industries where the personal efficiency of the worker determines earnings, but in the cotton industry the process of speeding up, and the increased intensity of labour, as indicated by closer application and ability to "mind" more machinery, have been operative nearly throughout the past century.

So far, we have only considered the evidence respecting the cotton industry, but the Act applied to all textiles. In Somerset and Dorset the inspector (T. J. Howell) reports[14] that "there has "been in some few cases a reduction of wages, but this was by no "means general in this part of my district (Crewkerne), and the "opinion seemed to be that as trade revived wages would revive "also; in fact, I was told that the scale of wages was already so "low as to leave but little margin for reduction." In Scotland the inspector (Jas. Stuart) reports,[15] "I have every reason to "think that many of the operatives complain of the reduction of "one-sixth part of their earnings, which has generally followed "the deprivation of one-sixth part of their hours of work"; but he did not "deem it prudent" nor "within his province" to examine the operatives on the point.

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[13] *E.g.*, 30th June, 1849. Reduction in hours and reduction in piece prices = 26 per cent. Rates of expected earnings 1845-49, 100 : 74. Ratio of actual earnings 100 : 93·6. Difference 19·6: due to speeding up $\frac{6}{148}$ = 3·0; due to increased application 16·6.

[14] xxii of 1849, p. 258.

In the Yorkshire woollen industry wages may have fallen, but any such fall must have been temporary, for the accounts we have for the Huddersfield district show a rise both between 1839 and 1849, and between this latter year and 1859. The reduction of hours is stated to have been from 65⅓ in 1839 to 60 in 1849, so that we may be sure that a reduction had taken place previously. It seems certain that the mills worked longer than 65⅓ hours in the early part of the century, though to what extent I have been unable to discover. The hours in cotton in 1839 were 72.

Wages in Wool. Huddersfield.[16]

	1839.		1849.		1859.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*
Warpers .... F.	7	–	8	–	10	–
Winders for power looms .... Y.G.	5	–	6	–	8	6
Reelers .... G.	6	6	7	6	8	6
Power loom weavers .... F.	8	8	9	10	12*s.*, 15*s.*	
Knotters and burlers .... F.	7	–	7	6	9	–
Boys and Girls—						
Servers or feeders for—						
1 scribbler	6	–	7	–	8	–
2 scribblers	7	–	7	–	8	–
Billy piecers	4	–	4	6	5	–
Mule ,, ...	5	–	5	6	7	6
Dressed cloth burlers .... W.	7	–	7	6	9	–
Hours	65⅓		60		60	

Subsidiary information, supporting this statement of the course of woollen wages, is given in Sir E. Baines' "Yorkshire," where the earnings of power loom weavers (women) at Leeds are given as:—

1835.	1848.	1857.	1870.
s.	*s.*	*s.*	*s.*
9	9	12	12

In this case earnings may have been reduced for a time after 1848, but the recovery soon came, and a rise of 33 per cent. certainly justifies the assumption that the effects of the reduction of hours were not permanently injurious to the operatives.

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[15] xxii of 1849, p. 259.

[16] "Returns of Wages," p. 95.

In this connection the observations of the factory inspectors are of value. L. Horner, in 1851, reported:—[17]

"The last year has afforded fresh proofs that the restrictions "now regulating the labour of children, young persons, and women "in factories, which have immensely improved their condition in "many respects, have not been attended with the injurious effects "upon trade which were apprehended.

"In all the departments of the factory in which wages are paid "by piecework—and these constitute, probably, not less than four-"fifths of the whole, the proportion to fixed weekly wages being "daily on the increase—it has been found that the quantity pro-"duced in 10½ hours falls little short of that formerly obtained "from 12 hours. In some instances it is said to be equal. This is "accounted for partly by the increased stimulus given to ingenuity "to make the machines more perfect and capable of increased "speed, but it arises far more from the workpeople, by improved "health, by absence of the weariness and exhaustion which the "long hours occasioned, and by their increased cheerfulness and "activity being able to work more steadily and diligently and to "economise time, intervals of rest while at their work being less "necessary."

A later and more matured judgment is equally decisive. Robert Baker, another inspector, told the Social Science Association in 1859, that "although the hours of work have been very much "diminished, wages have increased, in some cases 40 per cent., "and generally 12 per cent.," and that this reduction of hours and increase of wages had "not diminished any kind of textile "production, and therefore it did not injure our national pros-"perity."[18] Further evidence in support of this latter statement is found in Tooke's "History of Prices,"[19] where it is said that "during the years 1850-55 as many as 570 new mills (wool, "cotton, flax, and silk), with an aggregate of 14,389 H.P., were "built in the United Kingdom; that 226 of the old ones were "extended by additions, with 5,977 H.P.; while only 177 mills, "with 3,788 H.P., became unoccupied."

The Act of 1860.

The next extension of the Factory Acts took place in 1860, when bleaching and dye works were first regulated. The limits of the working day were not so strictly defined as those of 1850 for textiles, and, provisions being made for overtime, it was not so rigidly applied.[20] Nevertheless, a definite reduction of hours took place, and at Dundee we are able to trace its effects with some reliance.

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[17] "Factory Inspectors' Reports," 31st October, 1851, quoted Rae, "Eight "Hours for Work," pp. 23 and 24.

[18] Quoted Webb and Cox, "Eight Hours' Day," p. 96.

[19] Vol. xi, p. 52. Quoted Rae, "Eight Hours for Work," p. 24.

Wages in Bleaching, Dundee.[21]

	1855.		1858.		1859.		1860.		1861.		1863.		1866.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Women	6	–	5	6	6	–	7	–	6	–	8	–	7	6
Lads, 15—18 years	7*s.* 6*d.*, 9*s.*		6	–	7	6	9	–	9	–	12	–	9	–
Children, 13—15 years	4	6	4	–	4	6	5	–	4	6	5	3	6	–

The result indicated by this table is an immediate fall of about 10 per cent., which was not only recovered in a couple of years, but was succeeded by an absolute advance. The "Returns "of Wages" contain a large number of statements for other industries for 1860 and 1861, but this is about the only case in which a reduction is recorded. A decided increase took place in the line and flax, and jute industries in Dundee in these years, and as the state of trade in the bleaching industry depends on these, and was not therefore depressed, we cannot but conclude that the reduction of hours through the extension of the Factory Acts, temporarily reduced wages. Herein the experience of the cotton trade in 1848-49 is repeated.

The Act of 1861. *Hosiery and Lace.*

The next extension came in the following year, and brought under the control of the law two industries which had taken much longer than the textiles to pass from the domestic to the factory system, but in which long hours had hitherto prevailed. The "Returns of Wages" do not give any information for years prior to 1861, and we cannot compare wages before and after the Act, as in bleaching. For hosiery we have the following:—[22]

	1861.		1866.			1861.		1866.	
Looped fabrics—	*s.*	*d.*	*s.*	*d.*	Fancy hosiery and underclothing—	*s.*	*d.*	*s.*	*d.*
Hose seamers W.	3	6	4 7	6 –	Counter hands W.	6 14	– –	9 10	– –
Sewing machine hands .... W.	9	–	12	–	Menders				
Menders .... W.	9	–	10	–	Sewing machine hands			12	–
Children	2*s.*, 6*s.*		5	–	Dyeing, &c. .... W.	8	3	8*s.*, 12*s.*	

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[20] The almost universal experience of factory inspectors has been, and is, that where overtime is allowed, the provisions of the Acts, so far as they relate to hours of labour, are frequently violated.

[21] "Returns of Wages," pp. 86 and 87.

[22] *Ibid.*, pp. 129 and 130.

This evidence points to a considerable rise in the five years, and Felkin[23] says that conditions in bobbin-net manufacture in 1865 might be taken as representative of 1862. Hence, in these industries, any fall caused by the Factory Act must have been early recovered; but it is doubtful if there was any fall.

The Act of 1864.

This Act was brought about through the evidence given to the Commission on the Employment of Children in 1862-63, and for the first time (except mining) industries not connected with textiles were regulated. I have no evidence relating to the manufacture of percussion caps or cartridges, fustian-cutting, or paperstaining, but such as relates to the manufacture of earthenware and pottery is rather conflicting. In Staffordshire,[24] for instance, the "Returns" show an increase in some cases and a decrease in others, but the period 1860-61 to 1866 is too long to allow us to definitely ascribe either change to the Factory Act. In Worcester,[25] also, the only female adults mentioned, suffered a reduction, while the girls receive so large an increase that the statement for 1866 is probably a misprint. The reduction of hours at this place is also much more than was necessitated by

			1860–61.	1866.
			Per day. *s.* *d.*	Per day. *s.* *d.*
Earthenware	transferers	W.	1 9	1 6
	enamellers	W.	1 8	1 8
	burnishers	W.	1 1	1 8
Porcelain	enamellers	W.	1 8	1 7
	burnishers	W.	1 6	1 8

	1863.				1866.	1867–68.			
	s.	*d.*	*s.*	*d.*	*s.* *d.*	*s.*	*d.*	*s.*	*d.*
Painters F.	12	–	21	–	10*s.* 6*d.*, 12*s.*	—			
Painters G.	2	6	5	–	5*s.*, 6*s.*	2	–	5	–
Enamellers	—				12 –	10	–	14	–
Burnishers	—				10 6	8	–	12	–
Hours	62				50	50			

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[23] "History of the Machine Wrought Hosiery and Lace," 1867, p. 398.

[24] "Returns of Wages," pp. 232 and 233.

[25] *Ibid.*, p. 237.

the Act, and 50 hours may mean 56. It should be noticed that the wages of girls fell in 1867-68 to less than the amount stated for 1863; but this may be ascribed to the depressed state of trade, as the statements for enamellers and burnishers would indicate. In Newcastle[26] women's wages are given as 5*s*. to 9*s*. in 1860, and 10*s*. in 1866. Such conflicting evidence, therefore, is not sufficient for us to arrive at any conclusion in this case.

The Act of 1867.

For the extension of 1867 I have no evidence, and this is regrettable, because of the large number of industries which first became regulated by its operation. It was passed during a period of trade depression extending over two or three years, and then changing into a rapid expansion, which lasted until after the Franco-German war. All trades seem to have shared in the prosperity, and between 1868 and 1874 considerable increases are recorded in each industry for which wages index-numbers have been compiled. Thus, even if we had records for 1865-66 and 1868-69, we should have great difficulty in deciding how far changes in this period were due to the Factory Act, and how far to the conditions of trade. We may, therefore, pass to

The Act of 1874,

which reduced the hours in the textile trades from 60 to 56½ per week, and in January, 1876, raised the minimum age for full timers to 14 years, unless "evidence of proficiency" was produced.

In considering the effects of this Act, we are fortunate in the amount of material at our disposal. The state of trade, however, must be taken into consideration, and although in each industry there was an expansion from about 1868 to the early and middle "seventies," and a contraction afterwards, the change came in different industries in different years. For instance, the maximum in the Belfast linen trade was reached in 1872, and in wool, apparently, in the same year. In the jute trade the maximum was reached in 1873, and in cotton later still.

Taking first the cotton trade, we have figures for Manchester[27] which show an increase after 1874, and illustrate the effect of the depression which commenced about 1877.

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[26] "Returns of Wages," pp. 240 and 241.

[27] *Ibid.*, pp. 49—51.

		1874.	1877.	1880.
Drawing frame tenters	W.	12*s.* 6*d.*	17*s.* 6*d.*, 18*s.* 7*d.*	14*s.*, 15*s.* 4*d.*
Bobbin and fly „	W.	11*s.*, 16*s.*	16*s.* 6*d.*, 18*s.*	—
	G.	6*s.*	—	7*s.* 3*d.*
Cop reelers	W.	10*s.*, 11*s.* 6*d.*	12*s.*	—
Doublers	W.	10*s.*, 15*s.*	12*s.*	—
Cardminders	W.	8*s.*, 14*s.*	—	12*s.*
Gassers	W.	12*s.*	—	13*s.*

This table affords no means of comparison with an earlier year than 1874, but the hours were not reduced until after the time to which the 1874 figures relate. The table from Bevan, given in the Appendix,[28] confirms the fact of a rise after 1874, and there is no evidence of a fall, even for a short period. Even in 1880, when the lowest point of the subsequent depression had been reached, the earnings are above those of 1874, so that we may be assured that the effects of the Factory Act were not to reduce earnings.

The material for the jute trade is conflicting. Two tables of earnings for before and after the date of the Act indicate an increase in nearly all cases, while Miss Collet states that in the case of time workers a reduction was enforced because of the reduction of hours. I give the account of wages in 1871, 1874, and 1877,[29]

		1871. August.				1874.				1877.	
		s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Preparers for spinning	W.....	8	3	9	-	10	9	15	-	10	3
	Lads	5*s.* 3*d.*				8	-	9	10	8	-
Spinners	W....	8	9	9	3	10	6	12	-	10	6
	G.	5*s.* 9*d.*				7	9	12	-	7	6
Twisters	W....	9*s.* 3*d.*				12*s.*				11	6
Reelers	W.....	11*s.*				11*s.* 6*d.*				12	-
Winders	W.....	9	-	14	-	11	-	12	3	11	6
Warpers	W.....	13*s.*				12	9	16	7	13	-
Weavers	W.....	9	6	12	-	11	-	12	6	11	6
	G.	—				11	-	12	6	8	-
Hours		60				58				56 (? 56½)	

Hours reduced voluntarily in 1872, to 58.

and of the general changes in this industry, because the latter has great value apart from the purpose immediately in hand.

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[28] See p. 317.

[29] "Returns of Wages," pp. 81 and 82.

Changes in Dundee Jute Wages.

	Rise per Cent.	Fall per Cent.	Wages of	
			Spinners, 80 Spools.	Half Timers.
			s. d.	s. d.
February, 1871	5	—	—	—
September, '71	5	—	—	—
January, '72	5	—	—	—
March, '72	5	—	—	—
June, '73	—	—	12 -	3 4
July, '73	5	—	12 6	3 6
January, '75*..........	—	—	12 1	3 5
May, '75	—	10	11 -	3 1
July, '75†..........	—	5	10 6	2 11
November, '75	5	—	11 -	3 1
August, '77	—	5	10 6	3 -
November, '78	—	5	10 -	2 10
February, '79	—	5	9 6	2 8
December, '79	5	—	10 -	2 10
January, '83	5	—	10 6	3 2
August, '83	5	—	11 -	3 4
March, '84	—	5	10 6	3 2
July, '84	—	5	10 -	3 2
November, '84‡..........	—	5	—	—
March, '85	—	5	9 6	3 -
September, '85	—	2½ and 5	9 3	2 11
June, '86	—	5	9 -	2 9
January, '87	5	—	9 3	2 11
September, '88	5	—	9 9	3 -
December, '88	5	—	10 3	3 2
September, '89	5	—	10 9	3 4
February, '90§..........	5	—	11 3	3 6
May, '92	—	5	10 11	3 4
Totals	70	57½ and 60	—	—

* Wages reduced by operation of new Factory Act.
† Five weeks' strike against 10 per cent. reduction.
‡ Piece hands only.
§ Mill hands, reelers, and winders only.

This statement of increases from February, 1871, to March, 1872, are taken from the "Report of the Factory Inspector, 1883," and the rest from Miss C. E. Collet's "Report to the Labour "Department on Changes in the Employment of Women and "Girls," to which I have already referred. I do not know how far the wages of spinners of 80 spools are typical of the earnings of all spinners, but other accounts indicate a uniformly higher average. If a change of 5 per cent. for spinners equals 6*d.* weekly, as appears from the statement, the wage in 1871 would be 10*s.* 6*d.*, and in 1900 11*s.* 9*d.* That the average wage in the spinning branch has increased, apart from changes in the list, may be reasonably inferred from the fact that while the general changes between 1886 and 1896 resulted in a rise of 20 per cent., the average wage increased from 8*s.* to 10*s.* 5*d.* for full timers, or by 30 per cent. In the weaving branch the average wage increased by 46 per cent. during the same period, with the same change in the level of the "list."[30] The wages of half-timers present specially interesting features, for the minimum age was raised in 1874 and 1891, with the result that the time wage was the same in May, 1892, as in June, 1873, while that of the spinners was lower by 1*s.* 1*d.* Here the limitation of the numbers has evidently increased the wages.

Although we must accept the statement that the reduction of time wages in 1875 was expressly due to the reduction of hours, we cannot conclude that pieceworkers' earnings were also reduced through the same cause. Allowing for the reductions in piece rates, it is possible that increased efficiency of the worker soon brought the earnings for 56½ hours level with those for the previous 60 hours.

In passing, it may be noticed that the great increase in wages in this industry, shown later in the index-numbers of women's wages, is partly due to the increase in the relative numbers of those employed in the better-paid occupations, compared with the number of children and of those employed at the lower-paid occupations.

In the Dundee linen and flax industry the change between 1874 and 1877 is not so pronounced as in the jute industry. Taking fourteen sets of wage-earners, in six cases the average remained unchanged, in four cases an increase is indicated, and in the same number of cases a fall. The figures are:—[31]

		1871.				1874.				1877.	
		s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Preparers for spinning	W.	6	–	10	–	9	6	11	–	10	–
	Lads	5	–	8	–	7	6	12	6	7	6
Spinners	W.	8	–	14	–	10	6	13	6	13	6
	G.	3	–	6	–	7	–	8	–	7	–
Twisters	W.	8	6	12	–	10	6	11	–	?	
Reelers	W.	8	–	14	–	10	–	14	–	13	6
	G.	4	–	5	–	7*s.*				7	–
Hacklers	W.	6	6	10	6	10	6	11	6	11	6
	Lads	4	–	7	9	8	–	11	–	8	–
Winders	W.	7	–	15	–	12*s.* 6*d.*				12	6
	G.	4	–	5	–	6*s.*				6	–
Warpers	W.	9	–	14	–	12*s.*				12	–
	Lads	4	6	7	–	7*s.*				9	–
Weavers	W.	8	–	16	–	15*s.*				15	–
	G.	—				8*s.*				8	–

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[30] Miss Collet's Report, p. 29.

[31] "Returns of Wages," pp. 73 and 74.

These changes after 1874 are such as seem unconnected with any general cause, and indicate, if anything, a state of flux. No argument can be based upon them, and in this they are not unlike those for linen and flax at Belfast.[32]

		1871.				1874.		1877.	
		s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Preparers for spinning	W.	6	–	8	–	6*s.*, 7*s.*		—	
Spinners	W.	6	6	8	–	8	–	8	–
Reelers	W.	6	–	7	6	8	–	7	9
Winders	W.	6	–	9	–	7	6	9	–
Weavers	W.	9	–	12	–	10	–	11	6
Warpers	W.	9	6	10	6	10	–	12	–
Hours		60				60		56½	

The preponderance of changes after 1874 in this case points to an average rise. The slight decrease in the case of reelers may be unreliable, in view of the great rise in the case of the same workers from 1871 to 1874. I only give these tables to draw from them the negative inference that the Act, seemingly, did not affect wages in this industry.

Turning next to worsted, a short table for Bradford—[33]

		1867-68.		1874.				1877.			
		s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Weavers	W.	12	–	16	–	18	–	14	–	17	–
Reelers	W.	10	–	15	–	16	–	12	–	17	–
Drawers................	W.	10*s.*, 12*s.*		11	6	12	–	10	6	11	–

indicates a fall after 1874, but the maximum was reached before this year, and we cannot tell if this fall is due to the Factory Act. The wages are at a higher level in 1874 and 1877 than in 1867-68, but we have no means of estimating the height of the maximum period. Wages in the woollen trade have declined since the seventies, and worsted has suffered in sympathy. A comparison of the course of men's wages may help us here. They were—[34]

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[32] "Returns of Wages," pp. 77 and 78.

[33] *Ibid.*, pp. 118 and 119.

[34] *Ibid.*, pp. 118 and 119. See Mr. Bowley's Paper on the "Wool and "Worsted Trades" in the *Journal of the Royal Statistical Society*, March, 1902.

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	1871.	1874.		1877.
	s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
Wool sorters	28 –	20 –	25 –	31 –
„ washers	17 6	16 –	18 –	17*s.*, 19*s.*
Machine wool combers	15 –	16 –	17 –	16 6
Overlookers	30 –	32 –	36 –	29*s.*, 34*s.*
Dyers	20 –	23 –	25 –	18*s.*, 26*s.*

indicating a slight rise between 1874 and 1877. If women's wages fell between two years and men's wages rose, the changes are not likely to have been caused by a change in the condition of trade, so that, perhaps, the Factory Act did cause the decrease of women's wages in this case. But it is a point on which I should not care to dogmatise: In wool, I have only figures for Dewsbury—[35]

		1871.	1874.	1877.
		s. *d.*	*s.* *d.*	*s.* *d.*
Scribblers' feeders	W.	12 –	13 –	14 –
Condenser minders	W.	12 –	12 6	?
Warpers	W.	13 –	?	15 –
Weavers	W.	16 –	16 –	16 –
	G.	12 –	16 – ?	?
Knotters and seamers	W.	12 –	13 –	12 –
Burlers	W.	12 –	18 –	12 –
Hours		59	56½	54

and here the hours worked are not those of the Factory Acts. The evidence is not consistent, as the weavers (the chief women workers) show no change from 1871 to 1877, while those of the class next in importance rose and fell. Perhaps this, interpreted by the fact that the maximum of the expansion was reached in 1873, points to the conclusion that the Act had little effect on wages.[36]

Later Acts have not reduced hours (except the Act of 1901, which is too recent for discussion here), and the course of wages since 1874 can be studied in the index-numbers.[37] In summing up the impressions gathered from the foregoing review, we find that in one or two cases the limitation of hours of labour by Factory Acts has, for the time being, reduced wages, especially of time workers, but that as soon as the industry affected has become settled under the new conditions, wages have risen to a higher point than previous to the passing of the Act, and that this has been ascribed by competent observers to the increased efficiency of the operative and the increased intensity of the work. The progress of this increased efficiency, as far as it relates to the cotton trade, may be studied in the table of F. Merttens, given in the Appendix.

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[35] "Returns of Wages," pp. 104 and 105.

[36] Compare the table of woollen wages from Bevan, in the Appendix.

[37] See p. 307.

Index-numbers of Women's Wages.

To facilitate comparisons for later years, I have prepared a table of index-numbers of women's wages in certain industries. They are the results of a preliminary study of the data collected for the purpose of more detailed work in this subject, and are not given here as final. The difficulties attending any attempt to compile wages index-numbers are great in any case, but with scanty records and only a few industries to work at, the difficulties are greater when women's wages are considered than when we consider all the workers of an industry. Again, the effect of errors caused by insufficient data when compiling index-numbers for an industry where both sexes are employed, tend to disappear in the final average where all industries are combined, because of the accuracy with which we can calculate those (*e.g.*, mining, building, seamen,) where we are concerned with men only. Hence all the numbers in the following table should be read as "about" 66, &c., and I have not attempted to average individual years for general comparisons. Most of the numbers given are probably near the truth, and are consistent with the evidence, and the figures in thick type will serve to form an idea of the relative advances, especially since 1860, of women's wages in the industries mentioned. More reliance may be placed on the numbers for the textiles than on the rest, because the data are more numerous and consistent, and these industries have been settled as factory industries for a longer period than the others. Probably the numbers for cotton, jute, linen and flax, are accurate within narrow limits of error, and will not be greatly altered by subsequent investigation. The numbers for pottery also rest on fairly good evidence.

Index-Numbers of Women's Wages.

(Calculated on the basis of 1883 = 100.)

	1824.	'33.	'40.	'45.	'50.	'55.	'60.	'63.	'66.	'71.	'74.	'77.	'80.	'83.	'86.	'91-92.	'95-96.	'99-1901.
Cotton	66	60	54	59	59	60	63	—	72	74	94	99	96	**100**	98	104	106	113
Wool	—	—	54	—	62	—	81	81	86	—	92	102	102	**100**	96	91	—	95
Worsted	71	67	—	—	—	72	78	82	82	80	114	104	100	**100**	91	85	90	92
Linen and flax	—	55	—	—	—	67	81	—	95	101	100	111	111	**100**	100	105	110	112
Jute	—	—	—	—	—	—	62	66	85	77	93	87	83	**100**	75	102	102	107
Silk	46	—	56	—	56	—	66	69	69	82	101	101	—	**100**	83	90	95	95
Hosiery	—	—	52	—	—	—	57	57	74	—	—	92	100	**100**	97	101	103	117
Lace	—	50	—	46	—	—	—	—	95	—	—	111	100	**100**	112	97	—	—
Printing	—	—	71	—	75	82	85	—	90	97	—	—	—	**100**	—	113	113	115
Pottery	—	70	—	—	—	74	76	—	78	80	87	92	84	**100**	—	113	113	113
Cotton printing and dyeing	—	—	—	—	—	64	73	75	—	—	107	103	98	**100**	—	—	—	—
Linen bleaching	—	—	—	—	—	41	48	55	75	77	93	93	—	**100**	—	—	—	—
Cotton "	—	—	—	—	71	—	78	—	—	99	—	109	—	**100**	—	—	—	—
Boots and shoes	—	—	—	—	—	—	80	—	81	82	—	103	105	**100**	—	106	—	110
Agriculture in Northumberland	—	53	67	67	67	67	67	—	67	80	107	—	**100**	—	—	—	—	—
Papermaking	—	—	65	—	65	—	75	—	—	—	—	—	98	**100**	—	—	—	—

Although I have not attempted to procure an average for separate years, I have done so for each decade, so that comparisons may be made with the index-numbers already published by Mr. Bowley and myself,[39] representing changes in average wages in the chief large industries. The comparison is as follows:—

	Women's Wages.	United Kingdom Average.[38]	United Kingdom Average (Bowley).[39]		Women's Wages.	United Kingdom Average.[38]	United Kingdom Average (Bowley).[38]
1820-30	58	66	65	1860-70	75	75	75
'30-40	56	63	60	'70-80	93	92	95
'40-50	58	61	60	'80-90	95	91	90
'50-60	62	68	65	'90-1900	100	100	100

In view of the work Mr. Bowley is publishing at intervals in the *Journal of the Royal Statistical Society*, the numbers representing the United Kingdom average are not final, but they are sufficiently well established for my present purpose, and probably are only liable to slight alteration. I give two sets of United Kingdom averages, that it may be seen what agreement obtains between two accounts calculated on different systems. The account in the second column is probably to be preferred.

By the aid of these numbers we are able to arrive at some conclusions. In neither case is much change shown between 1820-30 and 1850-60, but women workers do not *seem* to have suffered so great a decline as did the whole workers combined. The probable reason for this is that, as a rule, their wages were already so low that they could not easily be further depressed, and this fact may also account for the greater percentage increase since the latter decade. During the era of Factory Legislation, that is, since the "Ten Hours" Act, and its extension, in a more or less modified form, to other industries than textiles, women's wages have risen by about 66 per cent., while the average increase for the United Kingdom is about 45 per cent. The increase, too, has been progressive, while the United Kingdom numbers indicate stationariness or a fall during the "eighties." This, of course, is accounted for by the inflation in the iron and coal trades of the early "seventies" which raised the index-number for that decade above the point at which it could be sustained by the other and more regular industries in which men are only, or chiefly, employed. But the chief point to be noticed is that factory legislation has not lowered wages, but has been accompanied by a decided and progressive increase. How far this legislation has *caused* this increase I am not prepared to say, but in so much as by reducing hours of labour, raising the minimum age of entrance to the factory and so ensuring a certain amount of education, improving the sanitary and other accommodation of the worker, and regulating dangerous trades, it has increased the standard of efficiency and encouraged a higher standard of living; it seems to have been a factor making for the increase. May we not, also, conclude that if these have been the effects on women workers already under the protection of the Acts, further extensions to include the workers in the "sweating" trades would also be beneficial not only to the workers themselves but to the community at large?

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[38] See "Wages since the Industrial Revolution," by the present writer, "Co-operative Wholesale Annual, 1901."

[39] "Wages in the United Kingdom," by A. L. Bowley, p. 126. Cambridge, 1900.

Changes in the Employment of Men, Women, Young Persons, and Children.

An important aspect of factory legislation is its effects on the numbers of protected and unprotected workers employed. If the regulations of the Acts are irksome and hamper industry, changes might be expected in the direction of employing unprotected male adults in the place of protected women, young persons, and children. There are, however, two important reasons why this may not have taken place. First, the protected workers are usually employed in routine processes, where the employment of a male adult would not bring about a sufficient increase in the amount produced to pay that worker a reasonable wage. Second, the regulations of the trade unions which the male worker might join would probably become as stringent in relation to hours of labour as the Factory Acts, and as the hours now allowed by the Acts are above rather than below the average working week in industries where men are chiefly employed, it is reasonable to suppose that trade union action would reduce the hours in textile and other factories also, and the employer would not be the gainer in the hours which his machinery might run.

What has actually taken place may be seen in the following analysis of the proportions of men, &c., employed in certain industries. The *numbers* employed are given in the Appendix:—

Proportions of Children, Young Persons, Women and Men, Employed in Textile Industries, 1835-95.

	'35.	'39.	'47.	'50.	'56.	'62.	'68.	'70.	'74.	'78.	'85.	'90.	'95.
Cotton.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.
M. and F. under 13	13·1	—	6·3	4·5	6·5	8·8	10·3	9·6	13·9	12·8	9·9	9·1	5·8
M. 13—18	12·4	—	12·2	11·2	10·2	9·1	8·5	8·5	8·3	7·2	8·0	8·2	7·8
M. over 18	26·4	—	28·4	28·8	27·4	26·4	26·1	26·0	24·1	25·1	26·1	26·8	27·6
F. „ 13	48·1	—	53·1	55·6	55·9	55·7	55·1	55·9	53·7	54·9	56·0	55·9	58·8
Wool.													
M. and F. under 18	—	—	11·5	9·5	8·5	6·9	5·3	4·5	6·1	7·0	3·8	3·3	2·2
M. 13—18	—	—	17·0	15·8	14·1	12·9	11·0	11·1	10·2	8·4	8·9	8·8	7·7
M. over 18	—	—	37·0	38·6	38·6	40·4	35·5	36·8	35·6	35·7	37·3	36·4	38·1
F. „ 13	—	—	34·5	36·1	38·8	39·8	48·2	47·6	48·1	48·9	50·0	51·5	52·0
Worsted.													
M. and F. under 13	—	—	14·1	12·5	12·8	15·2	—	16·7	21·1	16·4	13·2	12·0	8·2
M. 13—18	—	—	8·6	9·6	8·1	7·7	—	8·6	7·9	7·6	8·5	8·5	9·1
M. over 18	—	—	14·0	19·0	20·6	21·6	—	22·9	22·2	22·7	25·2	25·9	24 2
F. „ 13	—	—	63·3	58·9	58·5	55·5	—	51·8	48·8	58·3	53·1	53·6	58·5
Flax and Jute. Scotland.													
M. and F. under 13	13·5	1·4	1·9	1·0	1·3	2·4	3·6	3·9	8·3	8·3	9·6	6·5	4·9
M. 23—18	8·4	12·7	9·3	10·4	10·0	8·8	8·2	8·5	8·4	6·9	6·6	7·4	6·7
M. over 18	11·5	13·1	16·3	16·9	15·9	17·4	17·3	16·9	17·2	17·6	19·0	20·0	20·6
F. „ 13	66·6	72·8	72·5	71·7	72·8	71·4	70·9	70·7	66·1	67·2	64·8	66·1	67·8
Flax. England and Wales, and Ireland.													
M. and F. under 13	17·9	5·9	4·4	3·2	2·8	4·9	4·2	4·0	6·8	7·3	8·0	8·4	6·5
M. 18—18	11·8	14·3	13·1	12·6	11·9	9·5	9·5	9·7	8·9	7·6	6·9	7·2	7·1
M. over 18	15·4	14·3	18·8	18·0	17·7	17·8	19·0	21·5	18·9	20·1	20·2	20·0	22·5
F. „ 13	54·9	65·5	63·7	66·2	67·6	67·7	67·3	64·8	65·4	65·0	64·9	63·5	63·9

Here we see the general character of the changes in the *personnel* of the chief textile industries. Over the whole period there has been in all cases a reduction of the percentage under 13 years of age. This change is probably due to the successive raising of the minimum age at which a child may enter a factory. The proportion of male "young persons" has also decreased in most industries, though in the worsted industry this change has not taken place, and in the flax and jute industries of Scotland it is not very marked. The proportion of women employed has increased in cotton, wool, and flax; in worsted men have increased, while the proportion of women has decreased; in the Scottish flax and jute industries the proportion of women increased at first, but, decreasing until recent years, shows a tendency to again increase; except in cotton and wool, men generally show a tendency to increase.

The combined effects of all these changes may be roughly seen in the following approximate analysis of the employment in all textiles:—

Sex and Age.	1835.	'39.	'50.	'56.	'70.	'74.	'78.	'85.	'90.	'95.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
M. and F. under 13	13	6	6	6	9	13	11	9	8	5
M. 13—18	13	16	11	11	9	8	7	8	8	8
M. above 18	25	23	27	26	26	25	26	27	28	28
F. „ 13	49	55	56	57	56	54	56	56	56	59

Of course, the preponderance of cotton operatives has a marked effect on these figures, and they should be considered in conjunction with those given in the previous tables and with the numbers employed as shown in the Appendix. They lead to some general conclusions, however, noticeably, that the percentage of children employed diminished after 1835 until the "sixties," when the expansion in the textile trades brought about a marked change. The increase continued for only a few years, and though the small proportion of 1850 has not yet been reached, a considerable decline has taken place. Males between 13 and 18 years have declined almost consistently, their places apparently being taken by females over 13 years. This is only the substitution of one class of protected workers for another, and cannot be due to any movement to evade the Factory Regulations. It may be, and probably is, due to the increased efficiency of the labour of female young persons and women, and in so far as this increased efficiency may be ascribed to Factory Acts, it is in the nature of an indirect effect. Women's labour was not regulated until 1844, so any change in the relative employment of men and women before that date is not traceable to the Acts, and since then the percentage of men employed has varied little. On the whole there seems no evidence of a movement in favour of the substitution of unprotected for protected workers, and the chief result of the changes has been a substitution of the protected adult and young person for the similarly protected child. In the interests of coming generations, this seems a most satisfactory and desirable direction in which to move.

Factory Legislation and Foreign Trade.

This need not detain us long, for the history of our foreign trade is too well known to need detailed discussion here, and I content myself by quoting a few of the chief statistics of imports of raw material and export of textiles.

*Some Statistics Relating to the Textile Trades.**

(In millions and decimals.)

Years.	Imports.		Exports.								
	Raw Cotton.	Wool: Sheep's, Lamb's, Alpaca, and Llama.	Cotton Yarn.	Cotton Piece Goods, Plain.	Cotton Piece Goods, Printed.	Linen Yarn.	Linen Piece Goods.	Jute Yarn.	Jute Piece Goods.	Woollen and Worsted Yarn.	Woollen and Worsted Stuffs.
	Cwts.	lbs.	lbs.	Yards.	Yards.	lbs.	Yards.	lbs.	Yards.	lbs.	Yards.
1850–54	7·38	95·38	134·09	945	597	20·32	117·50	†	†	14·47	116·94
'55–59	9·19	121·05	183·21	1,370	797	26·30	122·06	†	†	23·86	124·09
'60–64	8·45	170·27	123·70	1,338	740	34·14	149·35	†	†	29·47	146·63
'65–69	11·01	239·25	150·91	1,769	874	34·35	210·88	7·27	30·95	34·79	227·05
'70–74	13·61	311·10	205·51	2,409	1,037	32·11	205·52	13·41	81·49	37·74	286·43
'75–79	12·76	396·33	232·41	2,621	1,048	21·06	157·97	15·09	125·14	30·82	209·46
'80–84	15·31	485·02	248·88	3,122	1,371	18·02	156·73	21·04	214·02	32·16	193·44
'85–89	14·36	602·05	251·89	3,439	1,395	15·50	166·90	28·55	234·39	43·46	191·04
'90–94	15·66	695·90	235·89	3,410	1,585	15·50	165·87	31·51	244·41	46·09	‡
'95–98	16·44	732·24	249·40	3,406	1,658	17·79	172·59	43·32	239·17	59·80	‡
'99........	14·52	671·13	213·17	4,519	1,919	18·15	174·28	45·25	213·26	63·70	‡
1900........	15·71	561·84	158·27	3,233	1,798	16·35	154·71	38·71	173·98	57·15	‡

* From the "First Report of the Royal Commission on Depression of Trade," and the "Statistical Abstract."

† Not given.

‡ Cannot be shown owing to changes in classification. The reduction after 1875-79 is said to be due to the tendency to put more work and width per yard. The figures are treacherous unless all the details are known.

As affording fairer basis for comparison, I have given the quinquennial averages of the imports of raw cotton and wool and the exports of yarn and piece goods in four chief industries. In the imports no decline is found, so that the demands by the two great industries have almost consistently increased. So in the case of cotton and jute have the exports, but the linen trade declined after the later "sixties," though it has recently shown signs of revival. The woollen and worsted trade has increased its exports of yarn, but decreased its exports of stuffs, though owing to a change in the system of classification I cannot say to what extent. It is noteworthy, however, that the home demand for wool has greatly increased,[40] and has acted as a compensation for the decreased export trade. In view of the progress after the "Ten Hours" Act, this decline cannot be due to Factory Legislation, and it does not seem that legislation has adversely affected our foreign trade.

Summary.

We may now shortly summarise in a few words what we have seen. It is not certain that there is always a direct connection between Factory Legislation and women's wages, but as a rule the effect of each limitation of the hours of labour has been to raise wages, though for a while they may have fallen a little. This usually operates through an increase in the efficiency of labour, which maintains or increases the former output in the lessened hours. While such an increased efficiency is maintained, the expenses of production are not increased, and no damage is done to foreign trade in the product of the industry affected. The successive raising of the minimum age at which children may enter a factory, has lessened the proportion of children under 13 years employed, thereby giving employment for an increased proportion of women and female young persons. All these effects have been for the general good,—women have shared in the progress of the past sixty years, and their wages have risen with men's, but at a faster rate and more consistently.

[40] Consumption of wool per head of the United Kingdom, lbs.:—

1850.	'55.	'60.	'65.	'70.	'70-74.	'75-79.	'80-84.	'85-89.	'90-94.	'95-99.
6½	6¾	8½	9¼	10	10·6	10·5	9·8	11·2	12·4	13·0

F. Hooper, "Statistics of Bradford Woollen and Worsted Trades." Bradford, 1901.

APPENDIX I.

The State of Trade in 1847-49.

(J. Rae, "Eight Hours' Day and the Unemployed," "Contemporary Review," 1893.)

In Manchester there were 177 mills of all kinds, employing 40,333 operatives. Of these, the following were stopped at the various dates:—

1847.	Mills Stopped	Operatives Stopped.	1847.	Mills Stopped.	Operatives Stopped.
9th January ...	10	1,691	1st June	35	12,167
16th February	19	5,600	22nd "	24	9,136
23rd March	23	7,243	13th July	20	8,580
21st April	23	6,643	20th November { all	23	9,795
21st May..........	28	9,149	20th November { cotton only	19	7,364

On 28th April, 1847—

At Oldham	2,000 out of 20,000 unemployed.
" Rochdale	21 mills and 3,000 workers unemployed.
" Blackburn	6 "
" Preston...........	9 "

In the wool trade, in 1846, of 173 mills in Bradford and Leeds, 17 were stopped. In May, 1847, the conditions were worse than in any year since 1833. In November, 1847, only one or two days were worked in each week, and of 560 mills in Huddersfield and Dewsbury, 50 were entirely stopped. This was twice the usual number.

From the "Reports of the Inspectors of Factories."

Joint report of inspectors, November, 1847.

"Very great depression has continued to prevail in the various "branches of manufacturing subject to the Factories Regulation "Acts . . . Many factories have been closed during the whole "period; very many more have been only partially at work; "while some few have been at work full time throughout."

L. Horner's Report, 2nd June, 1848.

"As many mills have been already closed, and a large pro"portion have shortened their time of working several hours a "day, in many cases to half-time, the operation of the restriction "of young persons and women to 11 hours a day, which took "effect on 1st January, has been very partially felt."

Google

From the "Halifax Guardian," for 6th July, 1848.

"On Monday last the clause of the Factory Act limiting the hours of labour to 10 each day came into operation. The change, however, came noiselessly and unnoticed by any but those immediately concerned. In fact nature has anticipated the legislature, and instead of finding the Act of Parliament a burden and an evil, the manufacturers would only be too glad to be able to run their mills for the full time allowed by law."

APPENDIX II.

A Short List of some Events which may have affected Wages and Obscured the Effects of Factory Legislation.

1808–09	Heathcote's lace machines.
'10	Crisis.
'11 and 1816	Luddism.
'12–13	War.
'15	Waterloo. Declaration of Peace.
'16	Steam applied to lace.
'19	Return to specie payment.
'18-19	Trade depression.
'24	Great strike in hosiery trade. Power loom weaving at Preston. Scotch building mania.
'25–26	Crisis.
'26–33	Great depression in hosiery.
'29–30	Cotton spinners' strikes.
'32	Double decking in spinning introduced.
'34	Cotton spinners' riots, Oldham.
'36	Crisis. Cotton spinners' strike, Glasgow.
'39	Crisis.
Circa 1840	Power loom weaving supersedes hand loom weaving.
1841–42	Distress. Chartist strikes and riots.
'42	Railway mania.
'42–45	Peel's fiscal reforms.
1845	Irish potato famine. Steam power applied to hosiery.
'46–48	Intense depression.
'46	Repeal of corn laws.
'47–51	Gold discoveries.
'53	Preston strike; extended to nearly all Lancs. Amalgamated Cotton Spinners established.
'54	Hine and Mundella's wide ribbing machine.
'54–56	Crimean war.
'57	Crisis.
'61–65	American Civil war. Cotton famine.
'66	Overend, Gurney, and Co. failure. Crisis.
'71–72	Franco-German war.
'73	Inflation. German silver sales.
'73–74	France and U.S.A. demonetise silver.
'75	Strike in jute, Dundee.
'78	Glasgow bank failure; distress throughout Scotland.
'78–80	Depression.
'79	Lancs. cotton weavers' strike.
'85-87	Depression.
'90	McKinley tariff.
'93	Cotton spinners' strike. Indian mint closed.
'93-95	Depression.

Condition of the Cotton Trade from 1770 *to* 1863
(as summarised by Karl Marx, "Capital," p. 457).

1770-1815	Trade was only depressed or stagnant for five years.
1815-21	Depression.
'22-23	Prosperity.
'25	Crisis.
'26	Depression, misery, and riots among operatives.
'27	Slight improvement.
'28	Great increase in power looms and exports.
'29	Exports surpass all former years.
'30	Glutted markets, great distress.
'31-33	Continued depression.
'34	Increase of factories, shortness of hands.
'35-36	Great prosperity.
'37-38	Depression and crisis.
'39	Revival.
1840-43	Depression, great misery among operatives.
'44	Revival.
'45	Prosperity.
'46	„ at first, then reaction.
'47	Depression.
'48	„ increased.
'49	Revival.
'50	Prosperity.
'51	Reaction.
'52	Improvement.
'53	„ continued.
'54	Prosperity, then glut.
'56	Great prosperity.
'57	Crisis.
'58	Improvement.
'59	Great prosperity, increase in factories.
'60	Great prosperity.
'61	Prosperity.
'62-63	Cotton famine.

Statistics relating to the Cotton Trade.

(From F. Merttens, "On the Hours and Cost of Labour in the "Cotton Industry at Home and Abroad," Manchester Statistical Society, 1893-94.)

SPINNING MILLS.

	1829-31.	1844-46.	1859-61.	1880-82.	1891-93.
Operatives per 1,000 spindles	14·0	9·74	8·16	5·71	4·86
Hours per week	69	60	60	56½	56½
Average wages	10*s.* 6*d.*	11*s.*	12*s.* 6*d.*	17*s.*	19*s.*
Operatives in spinning mills	140,000	190,000	248,000	240,000	220,000

WEAVING MILLS.

	1829-31.	1844-46.	1859-61.	1880-82.	1891-93.
Power looms	80,000	225,000	400,000	550,000	660,000
Hand „	225,000	60,000	—	—	—
Operatives—					
Weaving mills	50,000	150,000	203,000	246,000	310,000
Hand loom weavers	225,000	60,000	—	—	—
Hours	69	60	60	56½	56½
Average wages—					
Mills	9*s.* 6*d.*	10*s.*	11*s.* 10*d.*	15*s.*	16*s.* 6*d.*
Hand loom weavers	7*s.* 6*d.*	8*s.*	—	—	—

Statistics relating to the Cotton Trade—Contd.

LOOMS PER OPERATIVE IN WEAVING MILLS.

(Shultze Gaevernitz, "Cotton Trade," p. 608.)

1820	0·9	1878	2·1
'50	1·6	'93	4·6

Supplementary Evidence relating to Wages before and after the Act of 1874.

(From Bevan.)

COTTON, MANCHESTER (p. 29).

	1871.		1876.			1871.		1876.	
	s.	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*
Blowing room, W.	12	–	—		Throstle spinners, W.	11	6	12	–
Sweepers, half-time	4	–	4	–		12	–	14	–
			5	–	Throstle doffers, B.	6	–	9	–
Lap carriers, B.	8	–	12	–		9	–	11	–
	10	–	16	–	Throstle doffers, half-time, B.	3	–	3	–
D.F. tenters, W.	12	6	17	6					
	13	6			Throstle winders, B.	12	–	—	
Intermediate tenters, W.	16	–	14	–		15	–	—	
	20	–	18	–	Doublers, B.	12	–	12	–
Slubber tenters, W.	13	–	17	3				15	–
	16	6	20	–	Loom tenters, B. and G.	5	–	—	
Rover tenters, W.	13	–	16	–					
	18	–	20	–	Reelers, W.	15	–	12	–
Back tenters, G.	7	–	9	–				15	–
	9	6	10	–	Weavers 4 looms, W.	18	–	16	–
Creelers, G.	6	6	7	6		22	–	24	–
	7	–							

WOOL (p. 66).

	1871.		1876.			1871.		1876.	
	s.	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*
Self-acting mule-piecers	5	–	8	–	Power loom weavers	10	–	14	–
	7	–	12	–		16	–	20	–
Self-acting half-time	2	6	3	–					
	3	6	4	–					

WORSTED (p. 73).

	1871.		1876.			1871.		1876.	
	s.	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*
Gill tenters	9	6	11	–	Warpers, W.	14	–	13	–
	10	–	12	–		18	–	15	–
Card ,,	13	–	10	–	Reelers, W.	10	–	10	–
			15	–		12	–		
Drawers, W.	9	6	10	6	Weavers, 2 looms, W.	10	–	13	–
	10	6	12	–		13	–	18	–
Spinners	7	6	8	6	Doffers and bobbin setters, half-timers	1	9	3	6
	9	–	9	6		3	6	4	–
Doffers and jobbers, B.	8	–	9	–					
	9	–							

Supplementary Evidence of Wages before and after the Act of 1874—*Contd*

Jute, Dundee (p. 52).

	1871.		1876.			1871.		1876.	
	s.	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*
Spinners	8	6	12	–	Warpers	8	–	13	–
	9	6	15	–		13	–	16	–
Piecers	4	6	9	–	Weavers	9	3	10	–
	7	–	10	–		12	–	20	–
Shifters	3	–	7	–	Half-timers	2	–	3	–
	5	9	8	6	Twisters	9	3	12	6
Bobbin carriers	4	6	7	–	Carders	8	6	10	–
Winders	8	–	9	–	Rovers	8	6	13	–
	12	–	16	–	Drawers	8	–	10	–
Reelers	8	6	13	–	Feeders	8	3	11	6
	11	6	16	–	Bundlers	11	–	10	–
								20	–

Flax, Dundee (pp. 45 and 46).

	1871.		1876.			1871.		1876.	
	s.	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*
Hecklers	7	6	8	–	Reelers	8	–	9	–
	10	6	11	–		15	–	17	–
Preparers	5	–	10	–	Winders	7	–	9	–
	8	–				15	–	16	–
Spinners	7	–	10	6	Weavers	8	–	10	–
	13	–	15	–		16	–	20	–

Silk (p. 90).

	1871.		1876.			1871.		1876.	
	s.	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*
Boys, spinning	10	–	12	–	Winders W.	9	–	10	9
						11	–		
					G.	—		9	6
Doublers and danters	7	6	11	3	Reelers	8	–	11	9
	10	6				9	–		

Silk Waste (p. 90).

	1871.		1876.			1871.		1876.	
	s.	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*
Preparers G.	9	–	10	–	Reelers	9	–	12	–
						10	–		
Spinners	9	–	11	–	Half-timers	2	6	2	6
								3	–
Doublers	9	–	10	6					

Persons Employed in Cotton Factories; from 1835-68, *from "Factory Inspectors' Reports"; from* 1870-95, *"Statistical Abstract."*

Sex.	1835.	1839.	1847.	1850.	1856.	1862.	1868.	1870.	1874.	1878.	1885.	1890.	1895.
M. and F. under 13 years	28,771	—	17,537	14,993	24,648	39,788	41,674	43,281	66,900	61,923	49,993	48,133	31,510
M. 13—18 years	27,251	—	33,814	37,059	38,941	41,207	34,324	38,209	38,557	34,730	40,205	43,561	42,355
M. over 18 "	58,053	—	78,783	94,960	103,882	119,268	104,461	117,046	115,391	122,079	132,269	141,925	148,724
F. " 13 "	106,059	—	146,894	183,912	211,742	251,306	220,605	251,551	258,667	264,171	281,603	295,176	316,294
Totals	220,134	—	277,028	330,924	379,213	451,568	401,064	450,087	479,515	482,903	504,069	528,795	538,883
Number of factories	—	—	—	1,932	2,210	2,887	2,549	2,483	2,655	2,674	2,635	2,538	—
Woollen Factories.													
M. and F. under 13 years	—	—	7,274	7,094	6,703	5,969	6,767	5,635	8,266	9,410	5,232	4,934	3,339
M. 13—18 years	—	—	10,624	11,884	11,134	11,213	13,978	13,770	13,690	11,258	12,462	13,188	11,968
M. over 18 "	—	—	23,135	28,655	30,579	35,179	45,098	46,048	48,050	47,828	52,000	54,115	58,652
F. " 13 "	—	—	21,654	26,810	30,675	34,622	61,338	59,677	64,599	65,848	69,622	76,492	80,051
Totals	—	—	62,687	74,443	79,091	86,983	127,181	125,130	134,605	134,344	139,316	148,729	154,010
Number of factories	—	—	—	1,497	1,505	1,679	1,658	1,829	1,800	1,732	1,918	1,793	—
Worsted Factories.													
M. and F. under 13 years	—	—	7,337	9,956	11,228	13,178	—	18,306	29,828	21,540	18,812	17,872	9,894
M. 13—18 years	—	—	4,452	7,695	7,116	6,614	—	9,481	11,259	9,944	11,777	12,614	10,964
M. over 18 "	—	—	7,228	15,185	18,079	18,619	—	24,950	31,622	29,657	34,864	38,386	28,840
F. " 13 "	—	—	32,780	46,901	51,371	47,652	—	56,820	69,388	69,784	73,277	79,452	69,781
Totals	—	—	51,797	79,737	87,794	86,063	—	109,557	142,097	130,925	138,230	148,324	119,479
Number of factories	—	—	—	501	525	532	—	630	692	693	725	753	—

Numbers of Persons Employed in Flax and Jute Factories in Scotland, at certain Ages.

[From C. E. Collet. C–8794.]

	1835.	1839.	1847.	1850.	1856.	1862.*	1868.	1870.	1874.	1878.	1885.	1890.	1895.
M. and F. under 13 years	1,806	243	405	279	426	955	1,881	2,544	6,341	5,670	7,248	4,861	3,659
M. 13—18 years	1,129	2,277	1,973	2,949	3,174	3,446	4,249	5,535	6,415	4,686	4,980	5,494	5,044
M. over 18 „	1,550	2,356	3,465	4,773	5,039	6,799	9,006	10,926	13,232	11,948	14,338	14,806	15,372
F. „ 13 „	8,924	13,021	15,487	20,311	23,083	27,817	37,011	45,823	50,721	45,573	48,789	48,946	50,546
Totals	13,409	17,897	21,330	28,312	31,722	39,017	52,147	64,828	76,709	67,877	75,355	74,107	74,621
Number of factories	170	183	?	189	168	190	165	239	243	254	257	239	261

In Flax. England and Wales.

	1835.	1839.	1847.	1850.	1856.	1862.*	1868.	1870.	1874.	1878.	1885.	1890.	1895.
M. and F. under 13 years	2,951	1,420	1,588	1,264	1,267	1,997	1,947	1,390	2,089	1,265	418	327	130
M. 13—18 years	1,770	2,279	2,385	2,039	1,932	1,383	1,730	1,744	1,380	808	604	510	483
M. over 18 „	2,341	2,287	3,837	3,357	3,551	3,651	4,371	4,796	4,632	3,442	2,766	2,193	2,164
F. „ 13 „	7,571	10,587	12,035	12,341	13,037	13,277	13,811	11,886	14,226	9,473	7,214	5,856	5,121
Totals	14,633	16,573	19,845	19,001	19,787	20,308	21,859	19,816	22,327	14,988	11,002	8,886	7,898
Number of factories	107	178	?	135	139	136	128	155	141	101	70	59	81

In Flax. Ireland.

	1835.	1839.	1847.	1850.	1856.	1862.*	1868.	1870.	1874.	1878.	1885.	1890.	1895.
M. and F. under 13 years	340	104	36	38	113	668	1,374	1,601	3,555	3,974	5,382	5,856	4,682
M. 13—18 years	399	1,397	2,458	3,024	3,844	3,761	5,812	5,560	5,960	4,588	4,370	4,791	4,748
M. over 18 „	463	1,366	3,128	3,868	5,053	5,966	10,627	11,307	10,983	10,871	11,911	13,181	14,478
F. „ 13 „	2,479	6,150	11,466	14,191	19,743	23,130	39,237	36,571	39,818	36,909	40,086	40,647	42,210
Totals	3,681	9,017	17,088	21,121	28,753	33,525	57,050	55,039	60,316	56,342	61,749	64,475	66,118
Number of factories	25	40	?	69	110	100	143	154	149	144	166	162	188

* Jute specifically mentioned for the first time. In many cases, both before and after 1862, jute factories were returned under flax.

DISCUSSION on MR. WOOD'S PAPER.

PROFESSOR EDGEWORTH expressed approbation of Mr. Wood's paper as a useful compilation of statutes and statistics. Mr. Wood's inferences inspired more confidence in that they were not very decisive. In the complexity of social phenomena they could not always expect to exhibit the effect of a cause statistically. The argument was in this respect somewhat like that in favour of free trade. It was only crazy dogmatists who regarded each change of tariff as an experiment proving their theory. As Professor Taussig's history of the American tariff showed, it was seldom possible to obtain such empirical verification; one must often be content with general reasoning. A general argument in favour of factory legislation, as a safeguard against the degradation of labour, had been given by Mr. Wood in his own and Mr. Horner's words. There was also a general reason against interfering with the action of adults more than might be necessary. He hoped that in this age of regulation they would not forget the lessons of liberty which had been learned from the great teachers of the nineteenth century.

Miss **C. E. COLLET**, M.A., believed that there was not the slightest ground for thinking that any effect was produced, one way or the other, on wages by factory legislation. To begin with, all the wages statistics from the time of the Ten Hours Bill to, at any rate, 1886, were of such a valueless kind that one could not possibly discern from them the slight change that might have taken place. It must be remembered that in 1847 hardly any woman would be earning *2d.* per hour, and even supposing that a reduction from as much as 13 hours per day to 10 hours per day did involve a proportionate reduction in wages, that would only come to something like *2s. 6d.* to *3s.* a week in such a case, and the statistics were not sufficiently good to show whether such a change was produced or not. Next, she did not think there was any reason for supposing that such changes as might be apparent had any connection with factory legislation. To begin with, they had no particulars whatever as to the total amount of time worked before the Ten Hours Bill in 1847. She preferred to take that date, because she believed that until the Act was extended to adult women it was not really and truly enforced. Before 1847 a very large amount of factory industry must have been carried on by water power, and that was a point of which, she thought, sufficient notice was not taken. It might be that there were very frequently long stretches when no work was done at all owing to want of power, and the Factory Acts were largely coincident with the extension of the use of steam power, which made it possible to give regular employment. Such things as changes in trade, improvement in machinery, and the application of steam, would all produce an effect on wages of so decided a character that the effect of the Act could hardly be noticed; it would be so slight that it would be swamped altogether. Another reason why, if they had full particulars, she would hardly look for any change in the wages was, that the Factory Acts had never yet reached the limit of fixing hours at a lower maximum than that which would have been voluntarily fixed by rational employers; therefore, if any effect were produced, if the Act had really been put in force, she should have looked for an increase in the earnings, from the mere fact that instead of sleepy, tired people, healthy people would have been working. They could afford, she thought, to experiment a little more in the direction of shorter hours, and even then still look for an improvement in the results. Whilst saying this, she was quite certain that a careful study of Mr. Wood's paper would afford most valuable information quite apart from the question of the effect of legislation.

Mrs. H. J. TENNANT expressed her appreciation of the value of the paper.

Mr. GEORGE HOWELL thought there were other circumstances than legislation which influenced wages in the textile trades. One useful thing Mr. Wood had done was to accentuate a point for which many of them had contended over and over again, viz., that proper legislation in favour of labour was not to the disadvantage of the country or of the employers as a whole.

The PRESIDENT said that one thing which struck him was the extent to which the attention of the legislature had been devoted to the factory operatives, and how much certain other classes had been neglected. He could not help contrasting the lot of a worker in one of these factories, where the fortunate operatives only worked 56½ hours, with that of the unfortunate shop assistant and small shopkeeper, who, as had been stated by Committees of both the Lords and Commons, had to work 84 hours a week, or nearly 30 hours a week more than the fortunate factory operatives. It seemed strange that the attention of Parliament and of the Government should have been directed to one class with such happy results, whilst another class of the community had been so sadly neglected. In conclusion, he dwelt on the difficulties Mr. Wood had overcome in reducing long and complicated Acts of Parliament, and setting forth the information contained in them to the form of these useful tables.

Mr. J. R. MACDONALD suggested that there was very considerable liability to error in the process proposed by Mr. Wood, who had abstracted one possible cause of the movement in wages, and, after having abstracted that cause—factory legislation—had related it to what was really the result of a very complicated series of facts. He did not at all blame Mr. Wood for having done that, but he would suggest that whilst he was doing this valuable work and developing it into completeness, he might make further studies, first of the effect of trades unionism at the periods, and secondly as to the effect of the more constant supply of motive power to which Miss Collet had referred. Whilst alive to the defects of Mr. Wood's method if it was pushed too far, he felt that if he had statistically proved the negative conclusion that factory legislation had not materially retarded the causes that made for an increase in wages, that exceedingly important conclusion justified the labour he must have expended on the paper.

Mrs. M. E. MacDonald considered that Miss Collet had somewhat under-estimated the possibility of tracing the effects of factory legislation. Indeed, though there was little evidence in the paper of the direct effect of legislation, there was a reference to a report of the Labour Department, in which it was stated that the wages of the time-workers in the jute factories of Dundee were lower directly after, and in consequence of, the passing of the Act reducing the hours. As this was almost the only instance of the lowering of wages due to legislation, she hoped some light could be thrown upon it. The factory inspector, in his report of the same time (1876), spoke of a depression in the jute industry, and of lower wages prevailing in it; but he did not mention the Act as having anything to do with this state of things, but attributed the position to various causes, mentioning especially the competition of India and continental countries.

Mr. G. H. Wood (in reply) said the reduction in the jute industry referred to was in January, 1875, and was a reduction of the standard time wages of spinners of 80 spools from 12*s.* 6*d.* to 12*s.* 1*d.*, and it had been printed in the Report of the Commissioners to the Royal Commission on Labour (p. 303). In each case it was said that these wages had been reduced through the operation of the Factory Act. He could find no evidence that wages in this industry were reduced at that time. As far as his figures went, he could not see any reason for believing that there was a direct reduction. Moreover, the figure of the wages of spinners with 80 spools was so much below the average wage of a spinner in the jute industry, that he was inclined to think the wages stated were hypothetical and not actual. They might be something like the wages of a time worker who worked on a piece work basis. The report which had been criticised by Miss Collet, and which he had used most in compiling his paper, was the result of the labours of the Committees of the Chambers of Commerce, reported to the Board of Trade as the earnings of operatives in particular industries in their districts. He believed that the figures which he had quoted throughout the paper were all within a reasonable measure of accuracy (especially for purposes of comparison of one year with another), and he did not at all agree with Miss Collet when she said that the statistics were "so wretched" that they could not be relied upon within half a crown a week in the wages of the adult woman worker. That in the average wages of the adult woman worker in 1847 would mean a movement upwards or downwards of 25 per cent. A rise of 25 per cent. in three years would indicate inflation, and he thought the figures sufficiently accurate to indicate that. In regard to Miss Collet's other point, all he had wished to do that day had been to answer the question whether factory legislation had reduced women's wages; and the answer was in the negative. He liked the application of the term "rational employer" used by Miss Collet. He did not believe harm could be done by factory legislation which extended gradually. If they reduced hours say from the present 55½ to 48 at one swoop, by an Act to be brought into effect on the first of January in any particular year, they might expect to find some difficulty and some temporary reduction of earnings in the normal week, but the gradual reduction which had taken place in 1874 from 60 hours to 56½ hours, and last year from 56½ to 55½ hours, was not likely to have had any such effect on industry. He could imagine that in some countries, in the textile industries, the reduction in the number of hours in a working week by 24 would result,.after matters had adjusted themselves to the new conditions, in a material increase of wages. For instance, in Japan the reduction of hours by 20 or 30 per week would probably double the wages of the operatives in a short time, because workers simply wasted half the day, since they could not possibly work one out on account of its length. In England there was no need to waste time, the day being of such a length that the operatives could work all the 55½ hours a week. With regard to Mr. MacDonald's criticism, he thought that much good could be done when they made an attempt to isolate individual causes, and study each of them separately. Then they could undertake to study the whole movement. He quite agreed that trade unionism had had some effect on wages, but he rather fancied that the rise in wages in some of the textile industries had had a greater effect on trade unionism than trade unionism on wages; that is to say, that trade unionism had come after the rise in wages and efficiency, and not before. Finally he thought that steam power was practically substituted for water power in the great majority of cases prior to the year 1847—which had been taken as the real starting point of factory legislation.

A hearty vote of thanks to Mr. G. H. Wood for his paper was then proposed by the President, and carried unanimously.

MISCELLANEA.

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I.—*Methods of Representing Statistics of Wages and other Groups not Fulfilling the Normal Law of Error.* By F. Y. Edgeworth, M.A., D.C.L., and A. L. Bowley, M.A.

Part I.—*Theoretical Considerations.* By F. Y. Edgeworth, M.A., D.C.L.

My contribution to this joint work is formed by a revision of my papers on the "Mathematical Representation of Statistics," which appeared in former numbers of this *Journal* (between December, 1898, and March, 1900, inclusive). The supplementary, like the earlier, discussions fall under two heads: A, groups which, though not perfectly normal, yet seem to have some affinity to the normal curve; and B, groups which evidently belong to a different category.

A.—Under the former head occur two cases according as the given group is considered as: I, approximating to a single normal curve; or II, formed by the superposition of two or more normal curves.

I. For this case two kinds of treatment were prescribed as alternatives: (a), the so-called method of *translation* or transformation; and (b), the *second* and further approximations to that law of error of which the normal probability-curve may be considered as the first approximation. A variant was constructed by the combination of the two treatments. There was also suggested a cross-division, according as the magnitude whose frequency is to be represented is supposed to be formed by the *addition* of elements all of which do not fluctuate normally, or by some *function* (other than the *sum*) of elements fluctuating normally or otherwise.

Further reflection, to be recorded elsewhere, has shown that these divisions of case I may for practical purposes be ignored (as we are dealing with forms which have a certain affinity to the normal curve). To begin with the simplest case, in which we take for the ordinate of the representative curve the ordinate of a normal curve corrected by a small increment;[1] this second approximation, referred to the centre of gravity as origin, is of the form—

$$(1)\quad y\Delta x = \frac{\Delta x}{\sqrt{\pi}c}e^{\frac{-x^2}{c^2}}\left(1 - 2\mathrm{j}\left[\frac{x}{c} - \frac{2}{3}\frac{x^3}{c^3}\right]\right);$$

where c is the modulus, and j is the mean cube of deviation from the centre of gravity divided by the cube of the modulus. Now shift the origin to the median by putting $x = \mathrm{x} - \frac{1}{3}\mathrm{j}c$; the distance of the median from the centre of gravity being, in the negative direction, $\frac{1}{3}\mathrm{j}c$. The equation of the curve referred to this new origin is—[2]

$$(2)\quad y\Delta\mathrm{x} = \frac{\Delta\mathrm{x}}{\sqrt{\pi}c}e^{\frac{-x^2}{c^2}}\left(1 - \frac{4}{3}\mathrm{j}\frac{\mathrm{x}}{c} + \frac{4}{3}\mathrm{j}\frac{\mathrm{x}^3}{c^3}\right).$$

This frequency-curve may be reached by displacing or *translating* a normal curve after the manner explained in the *Representations*.[3] Let there be a normal curve with centre at the median (of the given group), and unit modulus, say

$$(3)\quad \eta\Delta\xi = \frac{\Delta\xi}{\sqrt{\pi}}\,e^{-\xi^2}.$$

Transform this frequency-curve by putting

$$\frac{\mathrm{x}}{c} = \xi + \frac{2}{3}\mathrm{j}\xi^2.$$

The transformed curve is no other than the one above designated.[4]

We have thus a ready method of applying the method of percentiles to the extended law of error. For this purpose the constants involved may be determined either altogether by percentiles, or partly by moments and partly by percentiles, as Mr. Bowley seems to have found satisfactory.

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[1] Which proves to be (in proportion to the ordinate corrected) of the order $\frac{1}{\sqrt{n}}$; n being the number of independent elements which go to the formation of the magnitude of which the frequency is given. See the writer's paper "On the Asymmetrical Probability-Curve" in the *Philosophical Magazine*, 1896.

[2] Expanding in ascending powers of j, and neglecting powers above the first.

[3] Part I, *Journal of the Royal Statistical Society*, 1898, p. 678 *et seq.*, and appendix to Part IV, note 16. *Ibid.*, 1899, pp. 552.

[4] Neglecting powers of j above the first, we have

$$\xi = \frac{\mathrm{x}}{c} - \frac{2}{3}\mathrm{j}\frac{\mathrm{x}^2}{c^2} \qquad \Delta\xi = \left(\frac{1}{c} - \frac{4}{3}\mathrm{j}\frac{\mathrm{x}}{c^2}\right)\Delta\mathrm{x}.$$

Substituting these equivalents for ξ and $\Delta\xi$ in equation (3), and expanding in ascending powers of j, we obtain equation (2), when powers of j above the first are neglected.

The method may be extended without theoretical difficulty to a third (or further) approximation. We have now to transform equation (3) by putting $\frac{x}{\kappa} = \xi + \lambda\xi^2 + \mu\xi^3$; and to take κ, λ and μ such that when the curve thus transformed is shifted from the median to the centre of gravity as origin, the new curve may coincide with the *third* approximation to the law of error. It seems unnecessary to describe the operation in greater detail, as Mr. Bowley's trials of this more elaborate method seem to show that it cannot with advantage be applied in this concrete world of ours.

A variant of the percentile method is presented when we determine the constants by arranging that a certain quantity, which may be taken as the measure of misfit—namely, the sum of the differences (each taken in absolute quantity) between the area of each compartment as observed and as calculated—should be a *minimum*. When this principle is applied to the determination of the constant j, the other constants having been otherwise determined, it comes to the same[5] as if we sought the (weighted) median of the several values of j given by equating the observed area of each compartment to its calculated equivalent.

II. *Separation* may be attempted by way of (*a*) mean powers, or (*b*) percentiles. To the first class belong certain abridgments of Professor Pearson's splendid but laborious solutions which were offered in the second part of my *Representations*. It must now be admitted in the light of the experience afforded by Mr. Bowley's work,[6] that some of the abridged methods are affected with the proverbial character of short cuts. To omit the calculation of the fifth moment, and with the first four moments tentatively to reach a good solution, proves often unsatisfactory; the gain in ease is hardly compensated by the loss in certainty. If we dispense with tentatives by assuming a definite condition, such as the equality of the two *moduli*, there is the danger that this assumption may prove inappropriate; at least it is not safe to make that assumption unless there is some *a priori* ground for expecting it to be fulfilled. Such *a priori* ground does in fact exist in the case of natural groups; and probably also in other cases, such as that of *shot-marks*, to which Mr. Bowley has with great success applied the method suggested in the *Representations* (1899, p. 133; *infra.*, p. 354).

The transition is here easy to the method of percentiles, which, as explained in *Representations*, Part II (*sub finem*), and Appendix, Note 11 (1899, p. 137), may be applied with great ease to the simple case in which the *modulus* is the same for the two component curves, and the distance between their centres comparatively small. The modulus and those distances may be determined from (1) the difference between the quartile distance from the median, and (2) another datum tentatively assumed. Here, however, recurs the difficulty that the first datum is liable to considerable error. The extent of the error may be illustrated as follows. Whereas according to the analysis in the note referred to, we should expect that (if the group is separable in the manner above described) the difference in absolute quantity between the median and centre of gravity $= 1 \cdot 05\ Q_2Q_1$, (the difference between the distances of the respective quartiles from the centre of gravity); this equation is in fact often far from being satisfied.

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[5] See Mr. Bowley's work, *infra.*, p. 337.

[6] It has not seemed necessary to publish computations which led only to a negative result.

It is remarkable that this ill-determined datum is not only of the same kind, but actually the same as that which causes difficulty in the second approximation (to the law of error supposed homogeneous). For the coefficient (or product of coefficients), viz., $\chi\omega$, which we now equate to thrice the distance between the median and centre of gravity (according to equation (5), or equation (3), of p. 139, *Journal*, 1899, zero being put for q and higher powers of small quantities neglected), is identical with our old friend j; which also $= 3\frac{m}{c}$.[7] The same computation therefore serves for both constructions.[8]

In general the practical choice would seem to be either between the simpler forms of the second approximation to a homogeneous curve (including separation to a short distance), or the more elaborate, the Pearsonian, form of separation. In the latter case, when equal moduli may be presumed, we get off with only *four* moments, and a cubic instead of a nonic.

B.—As we leave the neighbourhood of the normal curve these methods become more troublesome, and it becomes less worth taking trouble about them. On the one hand, owing to the displacement of the median noticed in a former paper,[9] the adjustment of the percentiles becomes more tentative; and, on the other hand, the presumption that the formula corresponds to a fact becomes more feeble. We ought to give the preference to any workable method with a colourable hypothesis. This character, as it now appears to me, is possessed by a part at least of Professor Pearson's scheme for the representation of statistics, namely, that method which he introduces first,[10] and afterwards classes under his "generalised probability-curve" as Type III.[11] It may be suggested that this type—in so far as it differs from the normal curve or the approximations thereto—is eligible not because it represents a very asymmetrical binomial,[12] but because it is the locus of frequency for a magnitude which may well be of common occurrence, namely, a random aggregate of elements whereof each is constituted as follows: Transform a normal law of error $y = \frac{1}{\sqrt{\pi}} e^{-\xi^2}$ (referred to its centre as origin) by putting $x = \xi^2 (\Delta x = 2\xi\Delta\xi)$. The transformed frequency-curve pertains to an element such that, if a finite—not necessarily large—number of such elements be combined in random fashion, the aggregate will obey the law[13] $Kx^a e^{-hx}$ (where k, a, h are constants), a form which may be identified with the Pearsonian Type III. For instance, this must be the distribution of energy as between very small regions in the molecular world, according to the usual hypothesis of velocities varying according to the normal law of error. It is at least a plausible conjecture that the law may make itself felt in other parts of nature.[14]

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[7] The fact that the latter $c = c\,(1 + \omega)$ in the former notation is indifferent when dealing with quantities of the order of j.

[8] Here probably may be found the explanation of the paradox which has been noticed in a former paper (*Journal of the Royal Statistical Society*, 1898, p. 542), that a group approximately fulfilling the law of error, such as the statistics of statures for the kingdom of Italy, is often capable of being broken up into several sub-groups, such as the Italian provinces, with slightly different averages and moduli.

[9] *Representations*, appendix, note 16, *Journal of the Royal Statistical Society*, 1899, p. 552 *et seq.*

[10] *Transactions of the Royal Society*, 1895, A, p. 357.

[11] *Ibid.*, p. 273.

[12] Compare *Journal of the Royal Statistical Society*, 1899, p. 536.

I am quite prepared to find an equally good *rationale* for the "generalised probability-curve" in all its generality; but I am still unable to comprehend upon what principle the particular case of interdependent causes or elements adduced by Professor Pearson is taken as the type of interdependent causation in general. The difficulty here is not only, nor even principally, that which has just been noticed with reference to Type III: in that a case of binomial elements is taken without proof to represent the general case of multinomial elements. Doubtless, if Professor Pearson's original idea of a general type in the case of interdependent causes were verified for binomial elements, there would be a strong presumption, on the analogy of the normal *law of error*, that a cognate type would hold good, over a certain tract of the representative curve, for the general case of multinomial elements. It may be admitted too that, if there is such a general type, it is most likely to be observed in the cases which have a certain property in common with the case proposed as typical by Professor Pearson—the case in which a ball is drawn from an urn containing white and black balls, without replacement of the ball drawn. If the original numbers are not very small, the illustration is well calculated to illustrate the property that the change in the constitution or frequency-locus for each successive element consequent upon the values of the elements previously taken into the aggregate—like the change in the probability of drawing a black or white ball consequent upon the number of black and white balls drawn already—is gradual, and not *per saltum*. But even when the conditions of a general proof are thus mitigated—even if the issue is restricted to binomial elements with probabilities not varying *per saltum*—the claims of the "generalised probability-curve" are not undisputed.

An aggregate of binomial elements may be conceived as formed thus. A particle capable of moving only in the positive direction along a horizontal line starts from an origin O, and takes *n steps* of the following character. At each "step" the particle either moves a distance Δx to the right, or merely marks time and remains *in statu quo;* the alternatives occurring in random fashion with respective probabilities p and q. The position of the particle after n such steps having been noted, another and another are started on the same course, and the frequency with each particular position becomes a goal is noted. The law of frequency observed thus is the law of frequency for the aggregate of n binomial elements.

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[13] As shown by Czuber, *Theorie der Beobachtungsfehler*, Art. 61, p. 149.

[14] The plausibility is much diminished by the circumstance that when *very large* numbers of elements of the kind described are taken, the law of frequency for the aggregates becomes the *normal law*.

The simplest case is where the probabilities p and q are constant irrespectively of the position of the particle when a step is taken and of the number of steps which have before been taken. The resulting frequency curve is the law of error, approximately a normal curve with centre distant $np\Delta x$ from the starting point O and modulus squared $2npq$. Next, let the probabilities vary with the steps: being p_1q_1 for the first step, p_2q_2, &c., for the second step, and so on. The result is still the law of error, *mutatis mutandis.*

Professor Pearson breaks new ground when he in effect suggests that the probabilities may vary with the position at each step. He has not, however, clothed this idea in the simplest circumstances. That distinction would seem to belong to an arrangement in which the probability at each step should vary only with the position from which the step is taken, and not with the number of the steps that have been taken—the probability of drawing a black ball at any time should depend only on the number of black balls drawn before, and not also on the number of previous trials. This condition would be realised if after each drawing, whether a black or white ball was drawn, a white ball was always replaced in the urn.[15] It would indeed be unimportant whether we put first the simpler or the more general data, if the solution of the problem in the former case could be regarded as a particular, a "degraded" form of the solution in the latter case. But the solution of the two problems appears to be quite distinct. The solution, according to Professor Pearson's elegant method of finding the representative curve from the slope of the discontinuous locus proper to the data, turns upon the ratio between two successive ordinates, say y_r and y_{r+1}, representing respectively the probability that after a certain number, say t, trials there will have been drawn r, or $r + 1$, black balls. If the original number of white balls is a, and of black b, the ratio in question becomes for the case in which balls are not replaced *the reciprocal of*—

$$\frac{r}{b - r + 1} \times \frac{a - t + r}{t - r + 1};^{16}$$

and for the case in which a white wall is replaced after each drawing,

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[15] See Laplace, *Théorie Analytique des Probabilités,* Liv. ii, chap. iii, Art 17, for a cognate problem.

[16] Substituting in Professor Pearson's solution, *Philosophical Transactions,* 1895, A, p. 361, for his qn our a, for his pn our b, for his r our t, for his s our $t - r + 1$, for his y_s our y_{r+1}, and for his y_{s+1} our y_r.

$$\frac{r+1}{b-r}\times\frac{(a+r+1)^t-(r+1)\,(a+r)^t+\dfrac{(r+1)r}{1\cdot 2}(a+r-1)^t-\&c.}{(a+r)^t-r(a+r-1)^t+\dfrac{2(r-1)}{2}(a+r-2)^t-\&c.}\ ^{17}$$

The latter expression cannot by any possibility be subsumed under the former, yet it represents a particularly simple case of interdependent causation. As these expressions are quite distinct from each other, so they afford no presumption that in the general case of binomial steps being interdependent—when the probability of drawing a black ball after $r-1$ black balls have been drawn, and at the t^{th} trial say $y_{r,\,t}$, is a function of r and t other and more complicated than the simple functions proper to either of the cases above specified—the slope of the representative curve can be reduced to any universal type. I submit that the existence of such a type is what was to be proved, and that it has not been proved by Professor Pearson.

PART II.—*Applications to Wage Statistics and Other Groups.*

By A. L. BOWLEY, M.A.

SECTION I.—*Homogeneous Groups;* Corresponding to A 1 above.

The Application to Certain Statistical Groups of the Second and Third Approximations to the Law of Error.

Let N be the whole number of observations, $y\Delta x$ the number whose deviation from the centre of gravity of the whole group is between x and $x+\Delta x$, c the modulus, and j and i quantities to

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[17] I am indebted to Professor Love for a proof of the following proposition: If balls are drawn from a bag which at first contains a white balls and b black balls, and when a white ball is drawn it is replaced, but when a black ball is drawn it is laid aside and a white ball is put into the bag instead of it, the chance of drawing r black balls in t trials can be expressed in the form

$$\frac{1}{(a+b)^t}\,\frac{b(b-1)\ldots(b-r+1)}{r\,!}\,\Big[(a+r)^t-r(a+r-1)^t$$
$$+\frac{r(r-1)}{2\,!}(a+r-2)^t-\ldots+(-1)^r a^t\Big],$$

where the general term of the series in the square brackets is

$$(-1)^k\,\frac{r(r-1)\ldots(r-k+1)}{k\,!}\,(a+r-k)^t.$$

The incongruity between the two solutions is particularly striking in the case where the initial number of white balls (our a, Professor Pearson's qn) is zero. For in that case, when the balls drawn are not replaced, there is only one possibility, namely, that all the t balls drawn should be black; but when white balls are replaced as above stated, the number of black balls drawn r may have any integer value from 1 to t, with probability involving—besides the *factorial* $r\,!$—the *finite difference* $\Delta^r 0^t$.

be determined. Let $\tau = \frac{x}{c}$. Let Y_τ be the number of observations between the centre of gravity and the deviation $x (= c\tau)$.

Then the equations to the first, second, and third approximations in this integral form are respectively—

$$Y_\tau = \frac{N}{\sqrt{\pi}} \int_0^\tau e^{-\tau} \, . \, d\tau = N \, . \, F(\tau) \qquad \text{(i)}$$

$$Y_\tau = N \, . \, \left\{ F(\tau) \mp \frac{j}{3\sqrt{\pi}} \pm j \, . \, f(\tau) \right\}, \text{ where}$$

$$f(\tau) = \frac{1}{3} (1 - 2\tau^2) \frac{e^{-\tau^2}}{\sqrt{\pi}} \qquad \text{(ii)}$$

$$Y_\tau = N \, . \left[F(\tau) \mp \frac{j}{3\sqrt{\pi}} \pm j \, . \, f(\tau) + \frac{e^{-\tau^2}}{\sqrt{\pi}} \left\{ i\left(\frac{\tau}{2} - \frac{\tau^3}{3}\right) + j^2\left(-\frac{5\tau}{3} + \frac{20\tau^3}{9} - \frac{4\tau^5}{3}\right) \right\} \right] \qquad \text{(iii)}$$

In equations (ii) and (iii) the upper signs are to be taken when τ is positive, the lower sign when τ is negative. The positive direction should be that which does not contain the median.

It is clear that the term $\mp \frac{j}{3\sqrt{\pi}}$ will disappear in all cases when the areas contained between two ordinates are evaluated. This term is therefore ignored in the following work when such areas are in course of evaluation.

The following table gives the values of $F(\tau)$ and $f(\tau)$ correct to the third place of decimals for values of τ from 0 to 3·0; this will be found to be sufficient for approximate work. Full tables are given by Dr. J. Burgess in vol. xxxix of the *Transactions of the Royal Society of Edinburgh*, 1900, on which the following is based.

The second table gives the values of Y_τ in above equation (ii) for values of τ from 2·2 to − 2·2, and of j from 0 to ·3. This will be found sufficient for drawing the curves with fair accuracy.

When (i) and (ii) are plotted out in their non-integral form, (ii) intersects i at the points where $\tau = 0$ or $\pm \frac{1}{2}\sqrt{6}$.

Table of Values of $F(\tau) = \frac{1}{\sqrt{\pi}}\int_0^\tau e^{-\tau^2}.\,d\tau$, *and* $f(\tau) = \frac{1}{3}(1-2\tau^2)\frac{e^{-\tau^2}}{\sqrt{\pi}}$, *for Values of* τ *from* 0 *to* 3.

τ.	F(τ).	f(τ).	τ.	F(τ).	f(τ).	τ.	F(τ).	f(τ).	τ.	F(τ).	f(τ).
·00	·000	+ ·188	·50	·260	+ ·073	1·00	·421	– ·069	1·50	·483	– ·069
·01	·006	·188	·51	·265	·070	1·01	·423	·071	1·52	·484	·068
·02	·011	·188	·52	·269	·066	1·02	·425	·072	1·54	·485	·066
·03	·017	·187	·53	·273	·062	1·03	·427	·073	1·56	·486	·064
·04	·023	·187	·54	·277	·059	1·04	·429	·074	1·58	·487	·062
·05	·028	·187	·55	·282	·055	1·05	·431	·075	1·60	·488	·060
·06	·034	·186	·56	·286	·051	1·06	·433	·076	1·62	·489	·058
·07	·039	·185	·57	·290	·048	1·07	·435	·077	1·64	·490	·056
·08	·045	·184	·58	·294	·044	1·08	·437	·078	1·66	·491	·054
·09	·051	·183	·59	·298	·040	1·09	·438	·079	1·68	·491	·052
·10	·056	·182	·60	·302	·037	1·10	·440	·080	1·70	·492	·050
·11	·062	·181	·61	·306	·033	1·11	·442	·080	1·72	·493	·048
·12	·067	·180	·62	·310	·030	1·12	·443	·081	1·74	·493	·046
·13	·073	·179	·63	·314	·026	1·13	·445	·082	1·76	·494	·044
·14	·078	·177	·64	·317	·023	1·14	·447	·082	1·78	·494	·042
·15	·084	·175	·65	·321	·019	1·15	·448	·082	1·80	·495	·040
·16	·090	·174	·66	·325	·016	1·16	·450	·083	1·82	·495	·039
·17	·095	·172	·67	·328	·012	1·17	·451	·083	1·84	·495	·037
·18	·100	·170	·68	·332	·009	1·18	·452	·983	1·86	·496	·035
·19	·106	·168	·69	·335	·006	1·19	·454	·084	1·88	·496	·033
·20	·111	·166	·70	·339	·002	1·20	·455	·084	1·90	·496	·032
·21	·117	·164	·71	·342	– ·001	1·21	·456	·084	1·92	·496	·030
·22	·122	·162	·72	·346	·004	1·22	·458	·084	1·94	·497	·029
·23	·128	·159	·73	·349	·007	1·23	·459	·084	1·96	·497	·027
·24	·133	·157	·74	·352	·010	1·24	·460	·084	1·98	·497	·026
·25	·138	·155	·75	·356	·013	1·25	·461	·084	2·00	·498	·024
·26	·143	·152	·76	·359	·016	1·26	·463	·084	2·02	·498	·023
·27	·149	·149	·77	·362	·019	1·27	·464	·083	2·04	·498	·021
·28	·154	·147	·78	·365	·022	1·28	·465	·083	2·06	·4982	·020
·29	·159	·144	·79	·368	·025	1·29	·466	·083	2·08	·4984	·019
·30	·164	·141	·80	·371	·028	1·30	·467	·083	2·10	·4985	·018
·31	·169	·138	·81	·374	·030	1·31	·468	·082	2·15	·4988	·015
·32	·175	·135	·82	·377	·033	1·32	·469	·082	2·20	·4991	·013
·33	·180	·132	·83	·380	·036	1·33	·470	·081	2·25	·4993	·011
·34	·185	·129	·84	·383	·038	1·34	·471	·081	2·30	·4995	·009
·35	·190	·126	·85	·385	·041	1·35	·472	·080	2·35	·4996	·007
·36	·195	·122	·86	·388	·043	1·36	·473	·080	2·40	·4997	·006
·37	·200	·119	·87	·391	·045	1·37	·474	·079	2·45	·4997	·005
·38	·205	·116	·88	·393	·048	1·38	·475	·079	2·50	·4998	·004
·39	·209	·112	·89	·396	·050	1·39	·475	·078	2·55	·4998	·003
·40	·214	·109	·90	·398	·052	1·40	·476	·077	2·60	·4999	·003
·41	·219	·106	·91	·401	·054	1·41	·477	·076	2·65	·4999	·002
·42	·224	·102	·92	·403	·056	1·42	·478	·076	2·70	·4999	·002
·43	·228	·098	·93	·406	·058	1·43	·478	·075	2·75	·4999	·0014
·44	·233	·095	·94	·408	·060	1·44	·479	·074	2·80	·5000	·0011
·45	·238	·091	·95	·410	·061	1·45	·480	·074	2·85	·5000	·0009
·46	·242	·088	·96	·413	·063	1·46	·481	·073	2·90	·5000	·0007
·47	·247	·084	·97	·415	·065	1·47	·481	·072	2·95	·5000	·0005
·48	·251	·081	·98	·417	·066	1·48	·482	·071	3·00	·5000	·0004
·49	·256	·077	·99	·419	·068	1·49	·482	·070			

Values of $Y_\tau = \frac{1}{\sqrt{\pi}}\int_0^\tau e^{-\tau^2}\,d\tau \mp \frac{j}{3\sqrt{\pi}} \pm \frac{e^{-\tau^2}}{3\sqrt{\pi}}\,j(1-2\tau^2)$, *for Values of* τ *from* +2·2 *to* −2·2, *and of* j *from* 0 *to* 3.

	j =	0.	·02.	·04.	·06.	·08.	·10.	·12.	·14.	·16.	·18.	·20.	·22.	·24.	·26.	·28.	·30.
Values of τ.	+ 2·2	·499	·495	·491	·487	·483	·479	·475	·471	·467	·463	·459	·455	·451	·447	·443	·439
	2·0	·498	·494	·490	·485	·481	·477	·473	·468	·464	·460	·456	·451	·447	·443	·439	·434
	1·8	·495	·490	·486	·481	·477	·472	·468	·464	·459	·454	·449	·445	·440	·436	·431	·427
	1·6	·488	·483	·478	·473	·468	·463	·458	·453	·448	·443	·438	·433	·428	·424	·419	·414
	1·4	·476	·471	·465	·460	·455	·450	·444	·439	·434	·428	·423	·418	·412	·407	·402	·396
	1·2	·455	·450	·444	·439	·483	·428	·423	·417	·411	·406	·401	·395	·390	·384	·379	·373
	1·1	·440	·435	·429	·424	·419	·413	·408	·402	·397	·392	·386	·381	·376	·370	·365	·360
	1·0	·421	·416	·411	·406	·400	·395	·390	·385	·380	·375	·370	·364	·359	·354	·349	·344
	0·9	·398	·393	·388	·384	·379	·374	·369	·364	·360	·355	·350	·345	·340	·336	·331	·326
	0·8	·371	·367	·362	·358	·354	·349	·345	·341	·336	·332	·328	·323	·319	·315	·311	·306
	0·7	·339	·335	·332	·328	·324	·320	·317	·313	·309	·306	·302	·298	·294	·291	·287	·283
	0·6	·302	·299	·296	·293	·290	·287	·284	·281	·278	·275	·272	·269	·266	·263	·260	·257
	0·5	·260	·258	·256	·253	·251	·249	·247	·244	·242	·240	·288	·236	·233	·231	·229	·227
	0·4	·214	·212	·211	·209	·208	·206	·204	·203	·201	·200	·198	·197	·195	·193	·192	·190
	0·3	·164	·163	·162	·161	·160	·159	·158	·157	·156	·155	·155	·154	·153	·152	·151	·150
	0·2	·111	·111	·110	·110	·109	·109	·108	·108	·107	·107	·107	·106	·106	·105	·105	·104
	+ 0·1	·056	·056	·056	·056	·055	·055	·055	·055	·055	·055	·055	·055	·054	·054	·054	·054
	0	·000	·000	·000	·000	·000	·000	·000	·000	·000	·000	·000	·000	·000	·000	·000	·000
	− 0·1	·056	·056	·056	·056	·056	·057	·057	·057	·057	·057	·057	·057	·058	·058	·058	·058
	0·2	·111	·111	·112	·112	·113	·113	·114	·114	·115	·115	·115	·116	·116	·117	·117	·118
	0·3	·164	·165	·166	·167	·168	·169	·170	·171	·172	·173	·173	·174	·175	·176	·177	·178
	0·4	·214	·216	·217	·219	·220	·222	·224	·225	·227	·228	·230	·231	·233	·235	·236	·238
	0·5	·260	262	·264	·267	·269	·271	·273	·276	·278	·280	·282	·284	·287	·289	·291	·293
	0 6	·302	·305	·308	·311	·314	·317	·320	·323	·326	·329	·332	·335	·338	·341	·344	·347
	0·7	·339	·343	·346	·350	·354	·358	·361	·365	·369	·372	·376	·380	·384	·387	·391	·395
	0·8	·371	·375	·380	·384	·388	·393	·397	·401	·406	·410	·414	·419	·423	·427	·431	·436
	0·9	·398	·403	·408	·412	·417	·422	·427	·432	·436	·441	·446	·451	·456	·460	·465	·470
	1·0	·421	·426	·431	·436	·442	·447	·452	·457	·462	·467	·472	·478	·483	·488	·493	·498
	1·1	·440	·445	·451	·456	·461	·467	·472	·478	·483	·488	·494	·499	·504	·510	·515	·520
	1·2	·455	·460	·466	·471	·477	·482	·487	·493	·499	·504	·509	·515	·520	·526	·531	·537
	1·4	·476	·481	·487	·492	·497	·502	·508	·513	·518	·524	·529	·534	·540	·545	·550	·556
	1·6	·488	·493	·498	·503	·508	·513	·518	·523	·528	·533	·538	·542	·545	·549	·553	
	1·8	·495	·500	·504	·509	·513	·518	·522	·526	·531	·536						
	2·0	·498	·502	·506	·511	·515	·519	·523	·528	·532							
	− 2·2	·499	·503	·507	·511	·515	·519	·523									

Evaluation of c, j, i *by Moments.*

The most direct method of finding the constants is, as in the case of the normal curve, by evaluating the average of the powers of the deviations measured from the centre of gravity—that is, by the method of moments, made familiar by Professor Karl Pearson, from whose work the equations immediately following are adapted.

Let $\mu_1, \mu_2, \mu_3 \ldots$ be the first, second, third . . . moments about the centre of gravity; $\mu_1', \mu_2', \mu_3' \ldots$ the moments with respect to any origin of co-ordinates.

Then, if $\bar{x}$ is the abscissa of the centre of gravity, we have by definition—

$$\mu_1 = \frac{\Sigma(x-\bar{x})}{\mathrm{N}} = 0,\ \mu_2 = \frac{\Sigma(x-\bar{x})^2}{\mathrm{N}},\ \mu_3 = \frac{\Sigma(x-\bar{x})^3}{\mathrm{N}} \ldots.$$

$$\mu_1' = \frac{\Sigma x}{\mathrm{N}},\ \mu_2' = \frac{\Sigma x^2}{\mathrm{N}},\ \mu_3' = \frac{\Sigma x^3}{\mathrm{N}}, \ldots.$$

It is easy to show that $\mu_1 = \mu_1' - \bar{x} = 0$, $\mu_2 = \mu_2' - \bar{x}^2$, $\mu_3 = \mu_3' - 3\bar{x}\mu_2' + 2\bar{x}^3$, $\mu_4 = \mu_4' - 4\bar{x}\mu_3' + 6\bar{x}\mu_2' - 3\bar{x}^2$; and these equations afford the easiest way of calculating the moments.

If, as is generally the case, the observations are given not exactly, but as lying in certain belts of uniform breadth (*e.g.*, between 7 inches and 8 inches, between 8 inches and 9 inches, &c.), Mr. Sheppard[18] has shown that a correction should be made for the values of μ_2 and μ_4 when calculated as above. If m_2 and m_4 are the corrected values, $m_2 = \mu_2 - \frac{1}{12}h^2$, $m_4 = \mu_4 - \frac{1}{2}\mu_2 h^2 + \frac{7}{240}h^4$, where h is the breadth of the belt. In the following work this breadth is taken as the unit of abscissa, so that $h = 1$.

Then the proper values for c, j, and i are obtained from the equations: $c = \sqrt{2m_2}$, $\mathrm{j} = \frac{\mu_3}{c^3}$, $\mathrm{i} = \frac{m_4}{c^4} - \frac{3}{4}$.

The working of this method is shown in the following example.

Application to the Wage Census of 1886-91.

In the General Report of the Wages of the Manual Labour Classes in the United Kingdom (C–6889), p. 470, we have the following figures:—

Number of Men Earning at certain Rates in Thirty-eight Industries in 1886.

	Under 10*s*.	10*s*. and under 15*s*.	15*s*. and under 20*s*.	20*s*. and under 15*s*.	25*s*. and under 30*s*.	30*s*. and under 35*s*.	35*s*. and under 40*s*.	Above 40*s*.	Total.
Number of men	498	8,456	76,392	119,402	86,137	41,121	15,120	8,712	355,838

Suppose each group to be entirely at the middle of its belt, viz., at 12*s*. 6*d*., 17*s*. 6*d*., 22*s*. 6*d*. . . . . , and the extreme groups to be at 7*s.* 6*d.* and 42*s.* 6*d.* respectively. Take the origin at 7*s.* 6*d.* and take 5*s.* to be the unit of abscissæ. We then have the following scheme :—

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[18] *Journal of the Royal Statistical Society*, September, 1897.

Abscissæ. x.	Numbers per Mille in Groups. y.	yx.	yx^2.	yx^3.	yx^4.
0	1	0	0	0	0
1	24	24	24	24	24
2	215	430	860	1,720	3,440
3	336	1,008	3,024	9,072	27,216
4	242	968	3,872	15,488	61,952
5	116	580	2,900	14,500	72,500
6	42	252	1,512	9,072	54,434
7	24	168	1,176	8,232	57,624
	1,000	3,430	13,368	58,108	277,188

Hence—

$$N = 1000,\ \mu_1' = 3{\cdot}43,\ \mu_2' = 13{\cdot}368,\ \mu_3' = 58{\cdot}108,\ \mu_4' = 277{\cdot}188,$$
$$\mu_1 = 0,\ \ \mu_2 = 1{\cdot}603,\ \ \mu_3 = 1{\cdot}258,\ \ \mu_4 = 8{\cdot}35,\ \ m_2 = 1{\cdot}520,$$
$$m_4 = 7{\cdot}58,\ c = 1{\cdot}74,\ \mathrm{j} = {\cdot}237,\ \mathrm{i} = {\cdot}07,\ \mathrm{j}^2 = {\cdot}056.$$

Now transfer to the centre of gravity 3·43, as origin, and divide the abscissæ throughout by c. Then 1·74 of 5*s.* is the new unit, and 5*s.* is represented by ·575. The limit 25*s.* of the fourth group, which is ·35*s.* above the centre of gravity, has therefore the abscissa ·040.

English Wage Statistics, 1886, *and the Second Approximation.*

1 Limits of Groups.	2 τ.	3 $F(\tau)$.	4 $f(\tau)$.	5 $\mp \mathrm{j}.f(\tau)$.	6 Sum of Columns 3 and 5 × N.	7 Contents of Belts. Calculated.	8 Contents of Belts. Actual.	9 Differences between Columns 7 and 8.
10*s.*	− 1·684	·491	− ·051	+ ·012	503			
						41	25	16
15*s.*	− 1·109	·440	− ·080	+ ·019	459			
						198	215	17
20*s.* ...	− ·535	·275	+ ·061	− ·014	261			
						328	336	8
25*s.*	+ ·040	·023	+ ·187	+ ·044	67			
						248	242	6
30*s.* ...	+ ·615	·308	+ ·031	+ ·007	315			
						119	116	3
35*s.*	+ 1·189	·454	− ·084	− ·020	434			
						50	42	8
40*s.*	+ 1·764	·494	− ·043	− ·010	484			
						16	24	8
								66

The numbers in column 5 differ in signs from the corresponding numbers in column 4, when τ is negative.

The numbers in column 7 are obtained by subtracting the numbers in column 6, which are the values of Y_r without the $\frac{j}{3\sqrt{\pi}}$ term, successively from $\frac{N}{2}$ (= 500) at either end and from one another. In the belt which contains the centre of gravity the values must be added. A number above 500 shows that we have passed the limits of approximation, and must be neglected.

A convenient measure of the misfit is obtained by adding the differences between the calculated contents of the belts (column 7) and their actual contents, treating them all as positive; these differences are given in column 9. This sum is then expressed as a percentage of N. In this case the misfit is 6·6 per cent.; for the normal curve, which can be evaluated directly from column 3, the misfit is 22 per cent.

This is not a suitable case for taking in the i term; for we do not know the actual centre of the group above 40*s.*, and it is this group which has most influence on its evaluation.

It may be noticed that if we merge the two lowest and two highest groups, we have an almost exact agreement in the five compartments thus obtained, though we had only three constants (*c*, j and the centre) at our disposal.

Numbers Earning	Calculated.	Observed.
Less than 20*s.*	239	240
20*s.* but less than 25*s.*	328	336
25*s.* „ „ 30*s.*	248	242
30*s.* „ „ 35*s.*	119	116
More than 35*s.*	66	66

If we decide to choose j not as given *a priori* by moments, but as having that value which makes the misfit, just defined a minimum (as described above, p. 327), we should modify the above table thus:—

10	11	12	13	14
Sums of Columns 3 and 5.	Contents of Belts.		Differences.	Order of Magnitude in Column 13.
	Calculated.	Observed.		
·491 + ·051j ·440 + ·080j	60 − 80j	25	80 (j − ·43)	i
	165 + 141j	215	141 (j − ·35)	iii
·275 − ·061j				
	298 + 126j	336	126 (j − ·30)	iv
·023 + ·187j				
	285 − 156j	242	156 (j − ·28)	v
·308 + ·081j				
	146 − 115j	116	115 (j − ·26)	vi
·454 − ·084j				
	40 + 41j	42	41 (j − ·0)	vii
·494 − ·043j				
	6 + 43j	24	43 (j − ·41)	ii

In column 13 the differences are expressed as multiples of the divergences from the unknown j. It is easy to see that the sum of these differences (all taken positively) is least when j is chosen so as to equate to zero the divergence, which is the median, when the differences are placed in the ascending order indicated in column 14, and each divergence is counted as often as the number outside the brackets in column 13. For if j is taken greater than this value by a quantity *d*, all the divergences are increased or diminished by *d*, and more *d*'s are added than are subtracted; and conversely if j is diminished. The sum of the numbers outside the brackets in column 13 is 702, and of these i, ii, and iii contain 264 (less than half), while i, ii, iii, iv contain 390 (more than half). The least misfit is then obtained by equating to zero the divergence in line iv, whence j = 0·302. The sum of the absolute divergences is 42, and the misfit 4·2 per cent. We can call this method the method of "median misfit."

Giving j this value, we have (ignoring the 10*s.* limit)—

Numbers Earning	Calculated.	Observed.	Differences.
Less than 15*s.*	36	25	11
15*s.* but less than 20*s.*	207	215	8
20*s.* " 25*s.*	336	336	—
25*s.* " 30*s.*	238	242	4
30*s.* " 35*s.*	112	116	4
35*s.* " 40*s.*	52	42	10
More than 40*s.*	19	24	5

The test of misfit employed here was suggested by Professor Karl Pearson. For the present purpose at least the test seems as appropriate as his more elaborate test,[19] by which the chances can be assigned for the occurrence of given deviations of observations, from the values they should have if they arose by random selection from a group expressed by a given formula. For this test is only applicable when the observations are independent; if they are correlated, we should need to know the number of independent groups. On the other hand, if we knew the law of grouping, a breakdown under the test would show correlation. In this and in other wage groups we are not dealing with unconnected units; there is a tendency towards a standard wage in many occupations, often small groups are entered as at a uniform wage: there is also a tendency to make wages an exact, not to say an even, number of shillings per week.

The curves (with j = ·3) are shown on the accompanying diagram. The skew curve cannot (with so large a value of j) be given accurately to the left of its intersection with the normal curve. The test of fit is the equality of the areas on the 5*s.* bases of the rectangles and of the skew curve.

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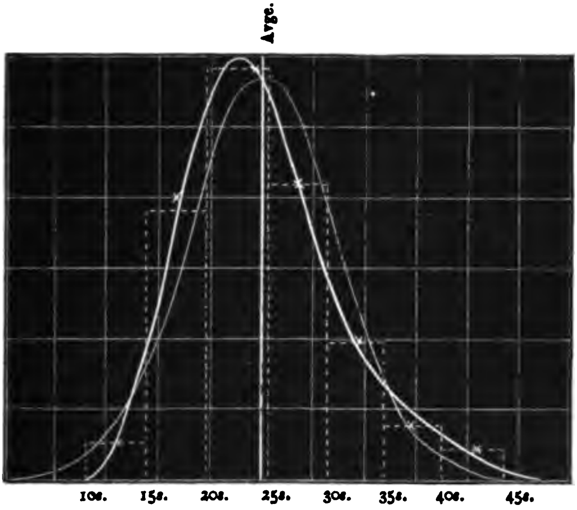
[19] *Literary and Philosophical Magazine*, July, 1900.

English Wage Figures.

Average, 24*s.* 8*d.* Mode at 22*s.* Median, 23*s.* 10*d.*
Normal curve ——— modulus, 8·7 (shillings).
Skew curve ━━━ $c = 8·7$. j = ·3.
Observations × × ×



Evaluation of the Constants by Percentiles.

The "percentile method" consists in observing what fractions of the given observations lie between the median and certain limits, and then choosing the constants so that these fractions and the calculated fractions up to the same limits shall be as nearly equal as possible.

We can proceed either by using (by interpolation if necessary) the position of assigned points, such as the quartiles or the points of inflexion, or by taking the limits given in the data as those within which assigned numbers lie. Thus in the figures just dealt with, we know that 24 per cent. earn less than 20s., 18 per cent. above 30s., and so on. The latter method is preferable, for we use the information in the exact form in which it is given, and avoid the hypotheses as to grouping within the belts which involve Mr. Sheppard's corrections, and above all do not need to know at all the shape of the extremes, which have so disturbing an influence on the moment calculations; while if we interpolate for the quartiles we introduce the possibility of very serious errors.

We can employ the percentile method in three main ways:—To find the median, c and j, independently of any other method; To find c and j when we are given the median or the centre of gravity; To find j when we are given c, and the median or the centre of gravity.

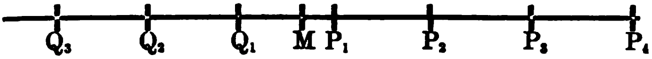
We shall illustrate all these methods; the choice is influenced by the nature of the data.

Taking the same wage statistics, we re-tabulate them as follows:—

Data.	1 Fraction of Group.	2 Hence the Fraction between the Median	3 F(r).	4 Corresponding Value of r from Table, p. 336.
Less than 10s.	·001	and 10s. limit is	·499	2·200 = q_3
10s.—15s.	·024	15s. „	·475	1·385 = q_2
15s.—20s.	·215	20s. „	·260	·499 = q_1
20s.—25s.	·336	—	—	—
25s.—30s.	·242	25s. „	·076	·136 = p_1
30s.—35s.	·116	30s. „	·318	·642 = p_2
35s.—40s.	·042	35s. „	·434	1·065 = p_3
Above 40s.	·024	40s. „	·476	1·400 = p_4

Here $q_3, q_2 \ldots p_4$ are the distances (with modulus as unit) on which the fractional areas given in column 3 would stand in a normal curve of error.

Let M be the median, and $Q_3, Q_2 \ldots P_4$, be the positions on the axis corresponding to the limits 10s., 15s., &c., in the skew-curve we have to obtain; thus—



The distances between these points are shown by Professor Edgeworth[30] to be connected by such equations as—

$$\text{MQ} = cq - \tfrac{2}{3}\,\text{j}cq^2,$$
$$\text{MP} = cp + \tfrac{2}{3}\,\text{j}cp^2.$$

As many equations are obtained as there are limits in the data; c is to be expressed in 5s. units as before; whence—

$$\text{Q}_3\text{Q}_2 = \text{Q}_2\text{Q}_1 = \text{Q}_1\text{P}_1 = 1.$$

Thus we have by subtraction or addition such equations as—

$$1 = (q_3 - q_2)c - \tfrac{2}{3}\,\text{j}c(q_3^2 - q_2^2).$$
$$1 = (q_1 + p_1)c - \tfrac{2}{3}\,\text{j}c(q_1^2 - p_1^2).$$
$$1 = (p_2 - p_1)c + \tfrac{2}{3}\,\text{j}c(p_2^2 - p_1^2).$$

Writing x' for c and y' for $\tfrac{2}{3}\text{j}c$, we have the following linear equations for determining x' and y':—

---

[30] See p. 326. Here q and p are used for ξ on the two sides of the median.

$$x' = (q_3 + q_2)y' + \frac{1}{q_3 - q_2}; \quad \text{that is} \quad x' = 3{\cdot}58y' + 1{\cdot}22 \qquad (a)$$

$$x' = (q_2 + q_1)y' + \frac{1}{q_2 - q_1}; \quad ,, \quad x' = 1{\cdot}88y' + 1{\cdot}13 \qquad (b)$$

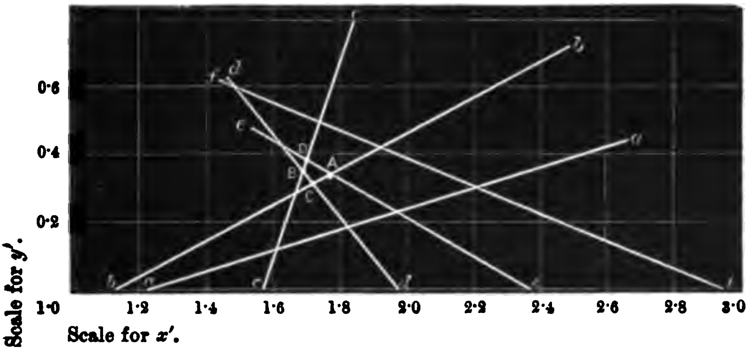
$$x' = (q_1 - p_1)y + \frac{1}{q_1 + p_1}; \quad ,, \quad x' = 0{\cdot}36y' + 1{\cdot}57 \qquad (c)$$

$$x' = -(p_2 + p_1)y' + \frac{1}{p_2 - p_1}; \quad ,, \quad x' = -0{\cdot}78y' + 1{\cdot}97 \qquad (d)$$

$$x' = -(p_3 + p_2)y' + \frac{1}{p_3 - p_2}; \quad ,, \quad x' = -1{\cdot}71y' + 2{\cdot}36 \qquad (e)$$

$$x' = -(p_4 + p_2)y' + \frac{1}{p_4 - p_3}; \quad ,, \quad x' = -2{\cdot}47y' + 3{\cdot}00 \qquad (f)$$

The lines are shown on the accompanying diagram.



If the observations fitted the curve perfectly, the lines (*a*), (*b*), (*c*), (*d*), (*e*), and (*f*) would be concurrent, and their common point would give the required values of x' and y'. As it is, we may with advantage apply Professor Edgeworth's "double median" method,[21] and find a point, line, or small area, such that, whether we proceed from it to the left, or right, or up, or down, we always intersect the same number of lines before we are clear of the network. The point A (1·77, 0·34) satisfies this condition: whence $c = 1{\cdot}77$, $\mathrm{j} = \frac{3}{2c}$ of $0{\cdot}34 = 0{\cdot}029$.

If we neglected the lines (*a*) and (*f*), as depending on the unreliable observations at the extremes, we should be placed anywhere within the quadrilateral ABCD, whose centre is about (1·72, 0·35). If we neglected the line (*a*) only (which is the same thing as ignoring the 10*s*. (limit), we might take any point on the line *e*, between A and D.

If we neglect the line *f* only, we may take any point in the line *b* between A and C. All these values of *c* lie between 1·69 and 1·77, and of j between 0·27 and 0·34.

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[21] "On a new Method of Reducing Observations," *Philosophical Magazine*, 1888.

If we wished to correct the extreme value we should choose to take the point within ABCD; as it is we adopt A to obtain the best fit.

We can thus see at once if any parts of the group will not fit the curve closely.

These values of c and j are not derived from the moments, and are little affected by the uncertainty about the centres of gravity of the extreme groups. We will illustrate the use of this method in determining the median in another example; for in this case we are given in the wage report the true average (which we could not use in calculating the moments), viz., 24·55*s*. Going through the work of fitting the curve with this centre, and with $c = 1·72$, $j = 0·29$, we find a total misfit of 5·0 per cent., and the errors are distributed in nearly the same group as before.

If we find by interpolation the position of M and of the points R_1 and R_2 corresponding to the points of inflexion on the normal curve, we have $j = \frac{3\sqrt{2}\,GM}{R_1R_2} = 0·33$, $c = \frac{1}{\sqrt{2}} R_1R_2 = 1·725$,

$$\text{and, alternatively, } j = \frac{\text{area on GM}}{\text{total area}} \times 3\sqrt{\pi} = 0·23.$$

Thus the value of c is very nearly the same by all the methods; the value of j is but little varied, but the "median misfit" method, and the "double median" method give a better value than the moments.

Example.—Ages of School Children.

A good example of the method is supplied by a table of the number and ages of children in the 4th grade of the Public Schools of St. Louis, Missouri, given in the official report of the Schools for 1899. We treat them first by the method of moments.

Ages.	Number in each Age-Group.	The same per Mille. y.	x.	xy.	x^2y.	x^3y.
8—9 years....	36	4	0	0	0	0
10 years........	537	58	1	58	58	58
11 "	2,094	226	2	452	904	1,808
12 "	2,759	298	3	894	2,682	8,046
13 "	2,170	235	4	940	3,760	15,040
14 "	1,127	122	5	610	3,050	15,250
15 "	386	42	6	252	1,512	9,072
16 "	118	13	7	91	637	4,459
17 "	15	2	8	16	128	1,024
18 "	6	1	9	9	81	729
19 "	1	0	10	0	0	0
	9,249	1,001		3,322	12,812	55,486

Origin 8½ years. Unit 1 year. N = 1001.

$\mu_1' = 3·319$, $\mu_2' = 12·800$, $\mu_3' = 55·435$; $\mu_1 = 0$, $\mu_2 = 1·784$, $m_2 = 1·701$, $\mu_3 = 1·106$, $c = 1·844$, $j = 0·176$. Average age 11·819 years. New unit 1·844 years.

Limits of Groups.	τ.	$F(\tau)$.	$f(\tau)$.	$\mp jf(\tau)$.	Y_τ.*	Calculated.	Observations.	Differences.
Years.						4	4	0
9	−1·529	·484	−·067	+·012	·496			
						66	58	− 8
10	− ·986	·418	−·067	+·012	·430			
						211	226	+ 15
11	− ·444	·235	+·093	−·016	·219			
						306	298	− 8
12	+ ·098	·055	+·182	+·032	·087			
						234	235	+ 1
13	+ ·640	·317	+·023	+·004	·321			
						116	122	+ 6
14	+1·182	·452	−·083	−·015	·437			
						48	42	− 6
15	+1·725	·493	−·048	−·008	·485			
						12	13	+ 1
16	+2·267	·499	−·010	−·002	·497			
						3	2	− 1
17	+2·810	·500	−·001	−·000	·500			
						0	1	+ 1
							Misfit	4·7%

* Without the $j/3\sqrt{\pi}$ term.

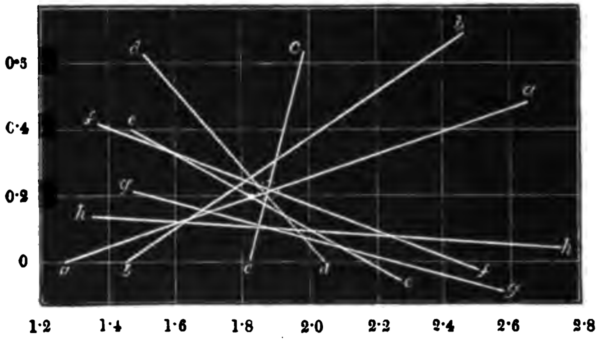
It is to be noticed that the chief discrepancies would be accounted for by any cause which produced a tendency to return children as between 10 and 11 years instead of in the neighbouring groups.

The curve is shown on the diagram on p. 346, but the constants are taken from the following percentile method.

Treating the same figures by the percentile method, we have—

Between Median and	$F(\tau)$.	τ.	Between Median and	$F(\tau)$.	τ.
8 years....	·500 of total	—	14 years....	·442 of total	$1·110 = p_3$
9 „	·496 „	$1·89 = q_3$	15 „	·484 „	$1·52 = p_4$
10 „	·438 „	$1·09 = q_2$	16 „	·497 „	$1·96 = p_5$
11 „	·212 „	$·396 = q_1$	17 „	·499 „	$2·20 = p_6$
12 „	·086 „	$·154 = p_1$	18 „	·500 „	—
13 „	·320 „	$·647 = p_2$			

The adjoining diagram shows the lines which result by the method just used on p. 341; *c* is represented on the horizontal axis, $\frac{2}{3}jc$ on the vertical.



If we neglect g and h, the intersection of a and d gives the "median" values, and we have $c = 1·87$, $j = 0·168$. Using these values, and referring to the work on p. 341, we have now nine equations giving the position of the median among the limits. The values thus given are respectively 11·79, 11·79, 11·71, 11·71, 11·70, 11·66, 11·68, 11·53, 11·99. Neglecting the two extremes at either end (for their probable error is greater than that of values nearer the centre), and (in default of an exact system of weighting) taking the average of the five remaining values, we locate the median at 11·714 years.

The centre of gravity is then at ($11·714 + \frac{1}{3}jc =$) 11·818 years, the position found by the method of moments.

We are thus in a position to construct the curve without the use of any moments. This is of great importance, for in many cases it is possible to locate some percentiles (three are sufficient) when the material for finding even the first moment is wanting.

In obtaining the equations which lead to such a "cart-wheel" diagram as that last given, we are at liberty to take any one q or p with any other: our object being simply to find the values of j, c, and the median which gives the best fit, there is no rule to be given except that of convenience. In this case the means and the median are justified by the results. It is best not to take narrow compartments, and to place little reliance on the extremes. It is not the least advantage of the method that the extremes are not used in detail, but that in fact they can be reconstructed from the means.

We have now to show how to fit the curve, whose constants we have evaluated, to the observations. To this we employ equations as given by Professor Edgeworth on p. 326.

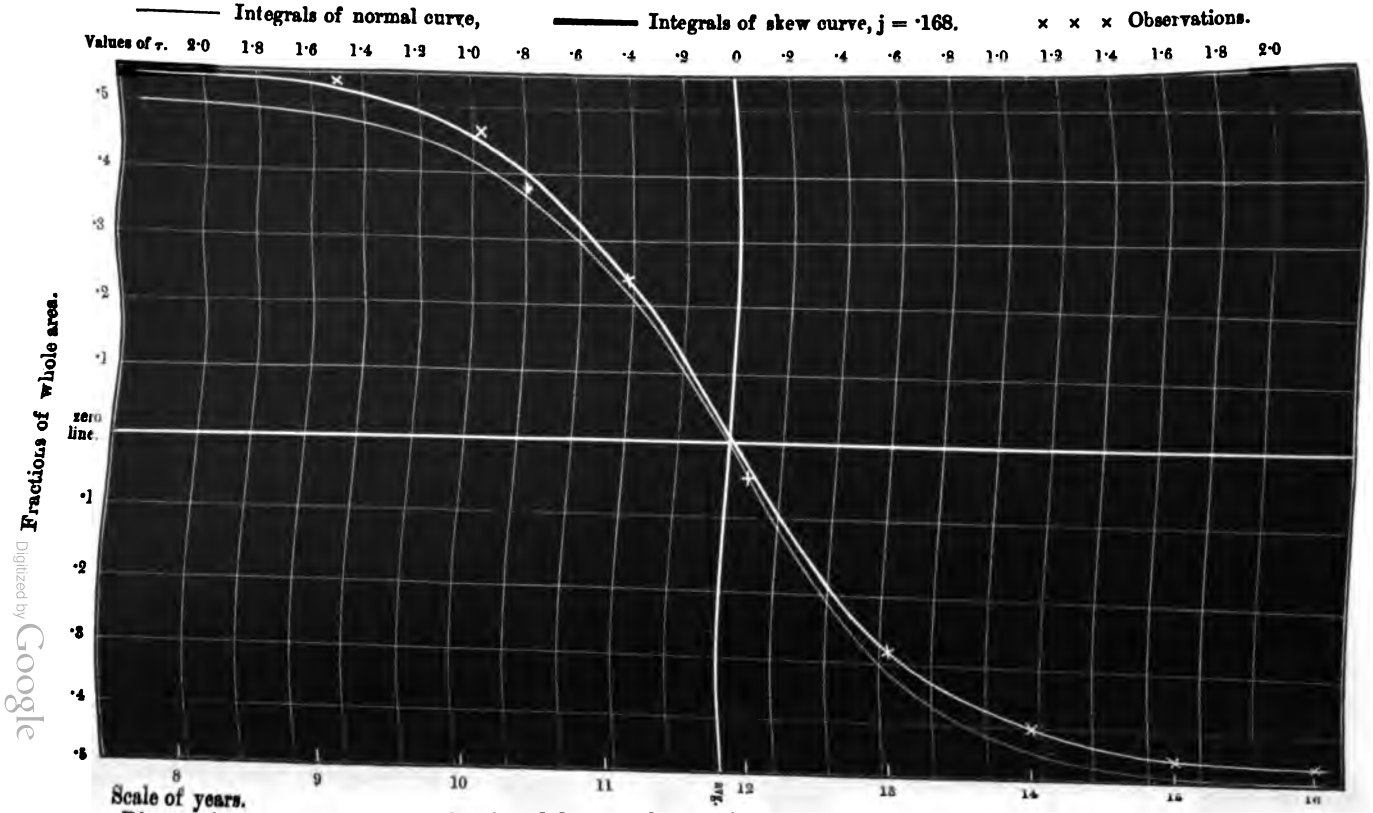
Let $q_3 \ldots p_6$ have the values given above. Let $q_3' \ldots p_6'$ be the values they should have to give exactly the median 11·714 years. Then we have nine equations such as $cq_3' - \frac{2}{3}jcq_3'^2 = 2·714 = X_3, \ldots cp_6' + \frac{2}{3}jcp_6'^2 = 3·286 = Y_6$, the numbers representing the corresponding distances from the median; replacing these numbers by $X_3, X_2, \ldots Y_6$, and reversing the equation, we have $q' = \frac{X}{c} + \frac{2}{2}j\left(\frac{X}{c}\right)^2, p' = \frac{Y}{c} - \frac{2}{3}j\left(\frac{Y}{c}\right)^2$. Then we can form a table as follows :—

	1	2	3	4	5	6	12 (*bis*)—(*contd.*)		
		$\frac{X}{c}, \frac{Y}{c}$.	Squares of Numbers in Column 2.	Numbers in Column 3 Multiplied by ± ⅓j.	Column 2 + Column 4, q_1', &c.	$F(q_1')$, &c., from Table *ante*.	Numbers in Groups. Calculated.	Numbers in Groups. Observed.	Differences.
							8	4	4
X_3	=2·714	1·452	2·118	+ ·237	1·689	·492			
							52	58	6
X_2	1·714	·917	·841	+ ·094	1·011	·440			
							217	226	9
X_1	·714	·382	·146	+ ·016	·398	·213			
							297	298	1
Y_1	·286	·153	·023	− ·003	·150	·084			
							231	235	4
Y_2	1·286	·688	·473	− ·053	·635	·315			
							117	122	5
Y_3	2·286	1·223	1·496	− ·168	1·055	·432			
							45	42	3
Y_4	3·286	1·758	3·091	− ·346	1·412	·477			
							15	13	2
Y_5	4·286	2·293	5·258	− ·589	1·704	·492			
							5	2	3
Y_6	5·286	2·828	7·948	− ·896	1·932	·497			
							3	1	2
									39

The misfit is 3·9 per cent., which is less than that found by the "moment" method.

The diagram is drawn with these constants, but the difficulty of using the numbers referred to the median made it expedient to calculate the theoretical numbers in the age-limits directly. In this diagram Y_τ (the area to τ) is taken as the ordinate, and for exactness of fit the observations should fall exactly on the skew-curve.

Ages of School Children.



Distance from zero line shows the fraction of the group between its centre of gravity and the corresponding value of τ.

Mr. Booth's Statistics of London Wages.

Mr. Booth gives a statement of the wages of 75,000 adult male wage earners in London as under (*Life and Labour of the People*, vol. ix, p. 371); we treat them by the percentile method:—

	Numbers.	Per Mille.	F(τ).	τ.	Calculated as below.	Differences.
Under 20*s.*	3,866	52	·448	1·152	66	+ 14
20*s.*—25*s.*	13,108	175	·237	·580	154	− 21
25*s.*—30*s.*	17,078	227	·046	·082	233	+ 6
30*s.*—35*s.*	16,818	224	....	....	225	+ 1
35*s.*—40*s.*	11,594	154	·178	·326	154	0
40*s.*—45*s.*	6,568	87·5	·332	·680	87	− ·5
Over 45*s.*........	6,044	80·5	·419	·992	81	+ ·5
						43

The unit is 5*s.*
The resulting equations for x' (c) and y'($\frac{1}{2}$jc) are—

$$\begin{aligned} x' &= 1{\cdot}682\,y' + 1{\cdot}61 \\ x' &= 0{\cdot}612\,y' + 2{\cdot}23 \\ x' &= -\,0{\cdot}244\,y' + 2{\cdot}45 \\ x' &= -\,1{\cdot}006\,y' + 2{\cdot}82 \\ x' &= -\,1{\cdot}672\,y' + 3{\cdot}21 \end{aligned}$$

These lines all pass near the point (2·41, 0·41), the point midway between the intersection of the 4th with the 1st and 2nd. Taking the resulting values of c (2·41) and j (0·255), we find the following six values for the distance of median above 20*s.*:—2·23, 2·16, 2·19, 2·17, 2·17, and 2·21. Neglecting extremes, we have 2·175, equivalent 30·87*s.* From this the centre of gravity is at 31·9*s.*[22]

With so large a value of j, whose square is not here negligible, it was found that the method of reversion used in the last example was not appropriate. The centre of gravity and the modulus were taken as above, and j was determined afresh as 0·24 by the median misfit method. The numbers so found are given above. The misfit is 4·3 per cent., and nearly the whole of it is due to a heaping up of the observations in the 20*s.* to 25*s.* limit. The curve is shown on the adjoining diagram.

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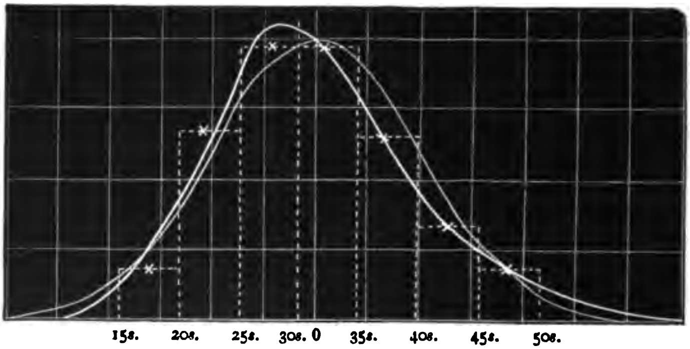
[22] Mr. Booth gives a caution against accepting these figures as being typical of London wages; *loc. cit.*

Mr. Booth's Wage Statistics.

Same horizontal scale and same area as English Wage Statistics.

Average, 31·9*s*. Median, 30·9*s*. Mode, 29*s*.
Normal curve, *c* = 12·05*s*. ————
Skew curve (j = ·24) .... ————
Observations .... × × ×



American Wage Statistics.[23]

Centre of gravity is $1·818, modulus $1·10. The value of j which gives the best fit is 0·34:—

	Calculated.	Observed.	Differences.		Calculated.	Observed.	Differences.
Below $ ·75	62	42	+ 20	$3·25—$3·75	40	40	....
$ ·75—$1·25	194	211	− 17	$3·75—$4·25	16	29	− 13
$1·25—$1·75	272	272	....	Above $4·25	5	1	+ 4
$1·75—$2·25	220	231	− 11				
$2·25—$2·75	122	128	− 6				
$2·75—$3·25	69	44	+ 25			Misfit	9·6%

The misfit with the normal curve is 28 per cent. The original elements of the group are very rough.

Other Wage Statistics.

The separate industries dealt with in the wage census do not for the most part fit a "*c*, j" curve closely; several show two modes, one at the wages of skilled, one at those of unskilled labour; others show the great mass grouped within narrow limits, in others the numbers tail off very rapidy below the mode, and there are other signs that we are not dealing with a number of independent causes, but that the groups within the industries are correlated. One group at least supplies a good example of the curve, viz., stone quarries:—

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[23] Compiled from the *Aldrich Report on Wholesale Prices, Wages, and Transportation*, 1891.

	Data.	Calculated.	Differences.		Data.	Calculated.	Differences.
Below 15s.	29	27	2	35s.—40s.	2	6	4
15s.—20s.	155	150	5	Above 40s.	—	—	—
20s.—25s.	366	378	12				
25s.—30s.	343	343	—				32
30s.—35s.	105	96	9			Misfit	3·2%

c = 6·5*s*. j = −0·06.

Mr. Rowntree's statistics of wages in York, given at pp. 359—361 of this number, do not yield to treatment by any of these methods. Examination of them shows that the aggregate is made up of a rather small number of groups lying near particular wage levels. The irregularity thus caused is partly smoothed by merging them in one heterogeneous group, but not sufficiently to bring them within the scope of the *c*, j curve. On the other hand, the separation into two normal groups, which the aggregation at 20s. and at 30s. renders plausible, breaks down in the actual work; the groups at 24s. and 40s. are too great to be ignored. The figures supply a good example of the nature of the raw material with which wage statistics deal. When we take such large and varied groups as those treated above, the number of minor irregularities is so great, and the centres of the small groups are in such various positions, that their idiosyncrasies are concealed, and the *c*, j curve is more nearly obtained.

Wages of Women in the London Printing Trades.[24]

	Observations.	Calculated.	Differences.		Observations.	Calculated.	Differences.
Below 2s.	1	4	3	18s.—20s.	72	90	18
2s.— 4s.	17	15	2	20s.—22s.	55	52	3
4s.— 6s.	41	32	9	22s.—24s.	17	25	8
6s.— 8s.	68	63	5	24s.—26s.	11	11	0
8s.—10s.	92	105	13	26s.—28s.	6	4	2
10s.—12s.	131	142	11	28s.—30s.	4	1	3
12s.—14s.	174	164	10	30s.—32s.	1	0	1
14s.—16s.	177	161	16				
16s.—18s.	131	130	1		998	Misfit	10·5%

c=6·764*s*. Average 13/8. j=0; that is, the curve is symmetrical.

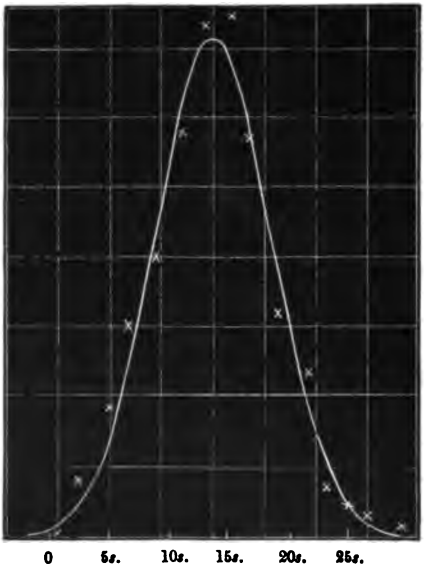
There were also two earning from 32s. to 34s. per week, and one from 36s. to 38s. It seems legitimate to exclude these, and also most of those above 28s., as probably being forewomen, and not belonging to this group. Noticing that the greater differences are in the larger groups, and that we are only dealing with a comparatively small number of not independent observations, we find that the misfit is not greater than we should reasonably expect.

[24] From the results of an investigation, soon to be published, by a Special Committee of the Women's Industrial Council.

Same horizontal scale and area as in the other wage diagrams.

Normal curve ———. Modulus, 6·764*s*. j = 0. Average, 13*s*. 8*d*.

Wages of women in the London printing trades × × ×.



Other Groups.

Number and ages of children in the 6th grade of the Public Schools of S. Louis, Missouri:—[25]

Ages.	Numbers.	Calculated Numbers.	Differences.	Ages.	Numbers.	Calculated Numbers.	Differences.
10—11	26	18½	7½	17—18....	13	16	3
11—12	201	208	7	18—19....	1	½	½
12—13	673	670	3	19—20....	1	0	1
13—14	1,001	1,007	6				
14—15	739	739	0				
15—16	310	309	1		3,045		32 = 1·05 %
16—17	80	77	3				

$c = 1·688$ (years), j = 0·085. Average 13·667 years.

If we omit the abnormal student over 19 years, and apply Professor Karl Pearson's test, we find that we should obtain so close a fit from a random selection of 3,045 cases belonging to the curve chosen only once in eleven trials; for in his notation $n' = 10$, $\chi^2 = 4$, $P = 0·91$.

For the application of the skew curve to observations, it will be found best to apply the method of moments to the calculation of the centre of gravity, and of c; if the belts are not too wide, nor the tails too long, j is then best determined by the method of "median misfit." The percentile method, on the other hand, should be used when owing to incompleteness or faulty tabulation the moments are likely to be erroneous, while some percentiles are known accurately. The labour of constructing the "cart-wheel" diagram is light, and the diagram at once shows whether it is worth while to proceed further, and which are the groups that will not come into the curve. The constants are determined without difficulty by this method, but on the whole the numerical work is nearly as heavy as in the moment method, and there is an additional difficulty in fitting the curve to the observations.

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[25] *Loc. cit.*

SECTION II.—Corresponding to A 2 above.

Separation of Groups into two Normal Curves. English Wage Statistics.

The nonic equation determining the separation, according to Professor Karl Pearson's method, has two real roots.

	First Separation.		Together.	Observations.	Differences.
Centre ……………… Modulus …………… Contents of group…	22*s*. 3*d*. 6*s*. 3*d*. 672	29*s*. 6*d*. 9*s*. 6*d*. 328			
Under 10*s*. …………	2	1	3	1	2
10*s*.—15*s*. ………………	32	4	36	24	12
15*s*.—20*s*. ………………	171	20	191	215	24
20*s*.—25*s*. ………………	288	55	343	336	7
25*s*.—30*s*. ………………	153	91	244	242	2
30*s*.—35*s*. ………………	25	87	112	116	4
35*s*.—40*s*. ………………	1	49	50	42	8
Above 40*s*. …………	0	20	20	24	4
				Misfit……..	6·3%

	Second Separation.		Together.	Observations.	Differences.
Centre ……………… Modulus …………… Contents of group…	22*s*. 8*d*. 6*s*. 6*d*. 786	31*s*. 10*d*. 9*s*. 214			
Under 10*s*. …………	3	0	3	1	2
10*s*.—15*s*. ………………	35	1	36	24	12
15*s*.—20*s*. ………………	182	6	186	215	27
20*s*.—25*s*. ………………	322	23	345	336	9
25*s*.—30*s*. ………………	198	53	251	242	9
30*s*.—35*s*. ………………	42	65	107	116	9
35*s*.—40*s*. ………………	3	46	49	42	7
Above 40*s*. …………	0	21	21	24	3
				Misfit……..	7·8%

The normal curves and that compounded by adding their ordinates are shown for each separation in the diagram.

First Separation.

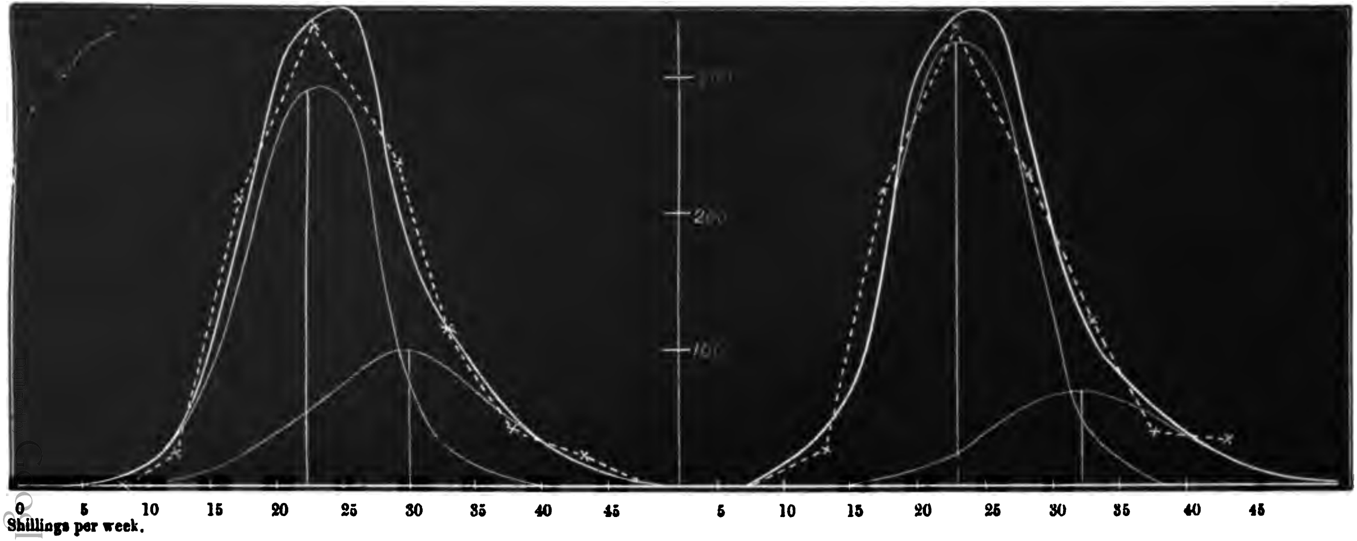
Compound curve of error ———

1. Centre, 22*s*. 3*d*. Modulus, 6*s*. 3*d*. Number 672.
2. ,, 29·6*s*. ,, 9*s*. 6*d*. ,, 328.

Second Separation.

Compound curve of error ———

1. Centre, 22·7*s*. Modulus, 6*s*. 6*d*. Number 786.
2. ,, 31·8*s*. ,, 9*s*. ,, 214.



Misfit, 6·3 per cent.

Misfit, 7·8 per cent.

Observations × × ×

The misfit with the best normal curve was 22 per cent.; with best "*c*, j" curve it was 4·2 per cent. These results would be expected if the group of wage earners dealt with was in the main composed of two groups: one, about two-thirds of the whole, with an average wage of 22*s.* 3*d.*, that of unskilled, or partly skilled, or unspecialised labour; the rest with an average wage of 29*s.* 6*d.*, that of skilled labour; while in addition to these there was an intermediate detachment not belonging strictly to either group.

The American wage statistics, which give a misfit of 27·6 per cent. with the normal curve, and 9·6 per cent. with the "*c*, j" curve, can be split into normal curves with resulting misfit 15 per cent. thus:—

Centre …………… Modulus …………… Contents ……………	$1·649 $0 85 824	$2·574 $1·53 176	Together.	Observations.	Differences.
$ ·25 ……………………	8	3	11	0	11
$ ·75 ……………………	47	5	52	42	10
$1·25 ……………………	153	12	165	211	46
$1·75 ……………………	259	19	278	272	6
$2·25 ……………………	227	27	254	231	23
$2·75 ……………………	102	32	134	128	6
$3·25 ……………………	26	30	56	44	12
$3·75 ……………………	2	23	25	40	15
$4·25 ……………………	0	14	14	29	15
$4·75 ……………………	0	6	6	1	5
$5·25 ……………………	0	2	2	2	0
$5·75 ……………………	0	1	1	0	1
				Misfit………	14·9%

The shot marks instanced by Merriman as an example of normal distribution, but shown by Professor Karl Pearson to be far from fitting the normal curve, have been treated in various ways.

The *c*, j curve does not give a good fit. But, by Professor Edgeworth's method (*Statistical Journal*, March, 1899, p. 133), the group can be split into two normal groups if we assume that they have equal moduli.

Using his notation, $\mu_2 = 2{\cdot}486$, $\mu_3 = {\cdot}104$, $\mu_4 = 15{\cdot}793$; hence $\lambda_4 = 8{\cdot}241$.

The root of the cubic in Ω is 1·177. Hence $\gamma_1 = 1{\cdot}110$, $|\gamma_2| = 1{\cdot}060$, $z_1 = {\cdot}490$, $z_2 = {\cdot}510$. Taking the boundary of the first belt as origin, and the breadth of a belt as unity, the centre of gravity of all is at 5·982 and of the parts at 4·922 and 7·092; and we have the following table:—

	Centre 4·9.	Centre 7·1.	Together.	Observations.	Differences.
In 1st belt ...	0	0	0	1	1
" 2nd " ..	2	0	2	4	2
" 3rd " ..	21	0	21	10	11
" 4th " ..	84	2	86	89	3
" 5th " ..	162	15	177	190	13
" 6th " ..	153	67	220	212	8
" 7th " ...	71	146	217	204	13
" 8th " .	15	156	171	193	18
" 9th " ...	2	81	83	79	4
" 10th " ..	0	21	21	16	5
" 11th "	0	2	2	2	0
				Misfit	7·8%

By Professor Karl Pearson's test as close a fit as this would be obtained about once in three times if the observations were of a group taken at random from an infinite group belonging to the assumed formula.

II.—*Notes on Life-Tables.*[1] *By* T. E. HAYWARD, M.B.

In order to determine as exactly as possible the amount of difference in E_x values due to different methods of calculation, an extended Life-Table has been worked out for *England and Wales* (males) from the data for 1881-90, by means of Dr. Farr's methods, as used by him for the English Life-Table for 1838-54.

The results so obtained are set down below in column (*a*). They indicate mean after-lifetime expressed in years.

In column (*b*) are given the corresponding values as found in the Life-Table officially published in the *Supplement to the Fifty-fifth Annual Report of the Registrar-General*, part 1.

In column (*c*) are noted the differences of (*a*) from (*b*):—

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[1] This paper is an addendum to the paper published in the *Journal of the Royal Statistical Society* for December, 1901 (vol. lxiv, p. 636).

Age.	(*a.*)	(*b.*)	(*c.*)	(*b*¹.)	(*c*¹.)
0	43·97	43·66	+ 0·31	43·28	+ 0·69
5	52·47	52·75	− 0·28	52·24	+ 0·23
10	48·94	49·00	− 0·06	48·59	+ 0·35
15	44·62	44·47	+ 0·15	44·28	+ 0·34
25	36·57	36·28	+ 0·29		
35	29·11	28·91	+ 0·20		
45	22·28	22·06	+ 0·22		
55	16·01	15·74	+ 0·27		
65	10·61	10·31	+ 0·30		
75	6·51	6·10	+ 0·41		
85	3·87	3·29	+ 0·58		
95	2·34	1·72	+ 0·62		

In column (b^1) the amended values of E_0, E_5, E_{10}, and E_{15} are given, which were obtained by the extended method described in the *Journal of the Royal Statistical Society*, September and December, 1899. See fig. 16, p. 689, and the table on p. 691, vol. lxii.

In column (c^1) are given the differences of the values in column (a) from the values in column (b^1).

The values in column (a) having been arrived at by approximately the same methods as those which were employed for working out the Official Life-Tables for 1838-54 and for 1871-80, they may be used to institute a comparison between the three Life-Tables.

At the same time another comparison may be made between three Life-Tables worked out from the same data by the modified short method, which was described in the *Journal of the Royal Statistical Society* for September, 1899.

In the following table columns (a) give the E_x values worked out by Dr. Farr's extended method, columns (b) give the corresponding values worked out by the modified short method, and columns (c) give the differences of (a) from (b) :—

England and Wales (Males).

Age.	1838-54.			1871-80.			1881-90.		
	(*a.*)	(*b.*)	(*c.*)	(*a.*)	(*b.*)	(*c.*)	(*a.*)	(*b.*)	(*c.*)
0........	39·91	39·31	+ 0·60	41·35	41·00	+ 0·35	43·97	43·32	+ 0·65
5........	49·71	49·39	+ 0·32	50·87	50·49	+ 0·38	52·47	52·30	+ 0·17
10........	47·05	46·60	+ 0·45	47·60	47·13	+ 0·47	48·94	48·65	+ 0·29
15........	43·18	42·76	+ 0·42	43·41	42·97	+ 0·44	44·62	44·33	+ 0·29
25........	36·12	35·99	+ 0·23	35·68	35·42	+ 0·26	36·57	36·34	+ 0·23
35........	29·40	29·26	+ 0·14	28·64	28·40	+ 0·24	29·11	28·87	+ 0·24
45........	22·76	22·59	+ 0·17	22·07	21·88	+ 0·19	22·28	22·04	+ 0·24
55........	16·45	16·19	+ 0·26	15·95	15·66	+ 0·29	16·01	15·71	+ 0·30
65........	10·82	10·46	+ 0·36	10·55	10·21	+ 0·34	10·61	10·24	+ 0·37
75........	6·49	6·04	+ 0·45	6·24	5·91	+ 0·43	6·51	6·06	+ 0·45
85........	3·73	3·32	+ 0·41	3·56	3·15	+ 0·41	3·87	3·32	+ 0·55
95........	2·17	1·75	+ 0·42	2·01	1·57	+ 0·44	2·34	1·72	+ 0·62

The preceding table shows how the results for each period differ from each other when obtained by two different methods.

It remains now to show how the E_x values of the three periods differ from each other, and how closely these differences approximate, by contrasting the results obtained by the two methods.

In the following table are shown (1) the differences of 1871-80 from 1838-54, and (2) the differences of 1881-90 from 1871-80, in each case by comparing the values of columns (*a*) and those of columns (*b*) in the preceding table.

Age.	Differences of 1871-80 from 1838-54.		Differences of 1881-90 from 1871-80.	
	(*a.*)	(*b.*)	(*a.*)	(*b.*)
0	+ 1·44	+ 1·69	+ 2·62	+ 2·32
5	+ 1·16	+ 1·10	+ 1·60	+ 1·81
10	+ 0·55	+ 0·53	+ 1·34	+ 1·52
15	+ 0·23	+ 0·21	+ 1·21	+ 1·36
25	− 0·44	+ 0·57	+ 0·89	+ 0·92
35	− 0·76	− 0·86	+ 0·47	+ 0·47
45	− 0·69	− 0·71	+ 0·21	+ 0·16
55	− 0·50	− 0·53	+ 0·06	+ 0·05
65	− 0·27	− 0·25	+ 0·06	+ 0·03
75	− 0·15	− 0·18	+ 0·17	+ 0·15
85	− 0·17	− 0·17	+ 0·31	+ 0·17
95	− 0·16	− 0·18	+ 0 33	+ 0·15

The calculations for the p_x values in column (*b*) of the table on p. 637 of the *Journal* for December, 1901, were inadvertently made without correcting the death numbers as well as the population figures. The death numbers should have been taken for the years 1838-54 in each case. The p_0 value remains correct.

CORRIGENDUM.

The corrected table should be:—

	Dr. Farr's Values (*a*).	Corrected Values (*b*).	Differences of (*a*) from (*b*).
p_0	0·83640	0·83106	+ 0·00534
p_1	0·93570	0·93423	+ 0·00147
p_2	0·96451	0·96358	+ 0·00093
p_3	0 97615	0·97539	+ 0·00076
p_4	0·98218	0·98194	+ 0·00024

The corrected p_x values have been used in working out the E_0 value (*b*) for 1838-54 given in the second of the preceding tables.

The following diagram is intended to geometrically illustrate Mr. A. C. Waters' new method of calculating mean population numbers.[2]

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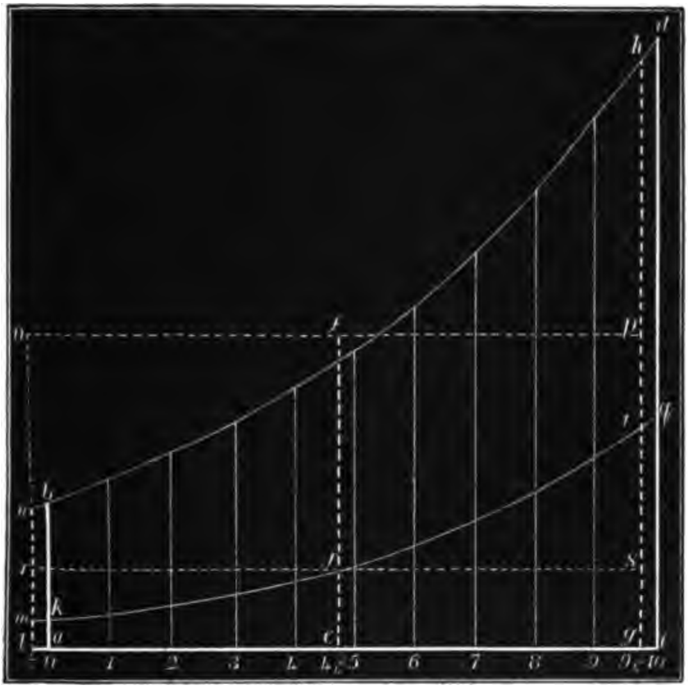
[2] See *Journal of the Royal Statistical Society*, vol. lxiv, part ii, p. 293, and part iii, p. 434.



Q₁ and Q₂, the total population numbers for the whole country at two successive censuses, are represented respectively by the ordinates *ab* and *cd*, which are erected at the extremities of a base line divided into yearly divisions 0 to 10.

ab is assumed to change to *cd* in geometrical progression, and the curve from *b* to *d* is drawn through the extremities of the intermediate ordinates.

In order to make adjustment for the non-coincidence of the intercensal period with ten calendar years, the base line is produced to the left for one-fortieth part of its length, corresponding to a fourth part of a year, and from the point marked $-\frac{1}{4}$ the ordinate *ln* is erected to meet the curve continued to the left from *b* to *n*. At the point of the base line marked $9\frac{3}{4}$ the ordinate *gh* is erected to meet the curve *nbd* at *h*.

$$ln = ab \times \left(\frac{cd}{ab}\right)^{-\frac{1}{40}}, \text{ and } gh = cd \times \left(\frac{cd}{ab}\right)^{-\frac{1}{40}}.$$

The true mean of all the ordinates between (and including) *ln* and *gh* is represented to scale by *ef*[3] erected from the base line

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[3] $$ef = \frac{cd - ab}{\left(\frac{cd}{ab}\right)^{\frac{1}{40}} \cdot \log. e\frac{cd}{ab}} = \frac{gh - ln}{\log. e\frac{gh}{ln}}.$$

at the point marked $4\frac{3}{4}$, and the true "years of life" (or ten times the mean population number) are measured by the parallelogram *lopg*, which is equal to the area bounded by the base line $-\frac{1}{4}$ to $9\frac{3}{4}$, by the ordinates *ln* and *gh*, and the curve from *n* to *h*.

The magnitude of P_1, some selected part of Q_1, is measured by *ak*, and *cq* represents P_2 the corresponding part of Q_2.

It is assumed that $\frac{ak}{ab}$ changes to $\frac{cq}{cd}$ in arithmetical progression.

The true "years of life" for the selected part will be measured by the area bounded below by the base line from $-\frac{1}{4}$ to $9\frac{3}{4}$, by the ordinates *lm* and *gi* at the sides, and above by the curve *mkji*, which is assumed to be constructed by plotting out the proportion of the part to the whole in each of the ordinates from *ln* to *gh*.

The method which has been described as that of "mean proportions" assumes the *ej*, the part of *ef* which is intercepted by the curve *mkji*, is the mean height of all the ordinates of this curve, and measures the "years of life" for the selected part by the parallelogram *lrsg*.

This assumption, however, in most cases, and especially in such an extreme case as that represented in the diagram, is not correct, and the true area, as defined above, will be accurately measured *in all cases* by Mr. Waters' new method.

Numerical Illustration.

In the diagram let

$$ab = 1{,}000 \text{ and } cd = 4{,}000.$$
$$ak = \quad 200 \text{ and } cq = 1{,}600.$$
$$\therefore \frac{ak}{ab} = \tfrac{1}{5} \qquad \text{and } \frac{cq}{cd} = \tfrac{2}{5}.$$

Then $ej = 570$, but the mean height of all the ordinates between *lm* and $gi = 663$.

If the diagram were reconstructed so that the proportions of the part to the whole at the two censuses are reversed, and $ak = \frac{2}{5}\, ab = 400$, and $cq = \frac{1}{5}\, cd = 800$, by the method of "mean proportions" *ej* would again measure 570, but the true mean of all the ordinates between *lm* and *gi* would measure 591.

III.—*Wages in York in* 1899. From Mr. B. S. Rowntree's investigations. Communicated by A. L. Bowley, M.A.

From p. 27 of Mr. Rowntree's "*Poverty*" we find that in the course of his investigations he made an estimate of the earnings of all the wage-earners in York, not including domestic servants. To use Mr. Rowntree's own words the basis of his estimate was as follows:—"In all cases in assessing wages, allowance has been made for short time, including public holidays not paid for, also for overtime and cost of tools; this allowance being based on information supplied by trade union secretaries, by masters, and by the workers themselves. No uniform allowance has been made for loss of wages through illness, but in the estimates of short time some allowance under this head has been made. Working upon these lines, the earnings of every wage-earner have either been ascertained or carefully estimated."

These figures are not published in detail in the book, but merged in family incomes and grouped together. Mr. Rowntree, however, in answer to a request, has caused the statements of all adult male wage-earners to be extracted from his material, and the result is given in the following table. On his basis the wage given has only to be multiplied by 52 to give the annual earnings. The figures are estimates, and in some cases estimates only to the nearest round number; thus "in many of the skilled trades the average weekly wages approximate to 30*s.*, in some cases being 1*s.* or 2*s.* more, in others 1*s.* or 2*s.* less," and in such cases the wages were entered as 30*s.* It seemed best to publish the table as it stands, rather than to attempt grouping in 5*s.* limits; analysis of the table soon shows the necessary corrections. Young men not out of their apprenticeship, and all under eighteen years are excluded, except one blacksmith at 18*s.*, who, though an apprentice, is the main wage-earner of his household.

All wages as great as 25*s.*, but less than 26*s.* are entered in the 25*s.* column, and so on: but as most of the wages were originally given in shillings, the average of each column is little greater than the whole number of shillings in the heading. The average of the whole is about 26*s.* 6*d.*; the median 25*s.* 9*d.*, the quartiles 20*s.* and 31*s.* The marked grouping near 24*s.* and 30*s.* is very noticeable, indicating that the gap between skilled and unskilled labour is more perceptible in York than in London, or in the country as a whole.[1]

The following were the standard rates, chiefly those recognised by certain trade unions, in York in 1899.[2] Bricklayers and plasterers 9*d.* an hour, 53 hours in summer, 47 in winter; masons, 9*d.*, 49½ hours, 44½ hours; carpenters and joiners, 8¼*d.*, 53 hours throughout; slaters, 8½*d.*, plumbers, 8*d.*, 53 hours, 47 hours;

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[1] See p. 349 *ante*.

[2] "Standard Time Rates," Labour Department, Cd–317, 1900.

painters, 7*d*., 53 hours, 44 hours; builder's labourers, 6*d*. Turners, fitters, smiths, millwrights, coppersmiths, brassfinishers (A.S.E.) 32*s*., 54 hours; ironfounders 30*s*., 53 hours. Boilermakers, angle-iron smiths, 37*s*.; platers and rivetters, 36*s*.; holders-up, 27*s*., 53 hours. Printers' compositors, jobbing and weekly papers, 31*s*., morning news, 38*s*., evening news, 31*s*. Bookbinders and machine rulers, 31*s*. Cabinetmakers, 30*s*. Gasworkers, per 12 hours shift, 5*s*. 3*d*. day, 4*s*. 9*d*. night. Police, 24*s*. to 32*s*. These may be usefully compared with the table when proper allowance is made for the method of its compilation.

The following are extracted from notes sent with the table: *Confectioners.*—Some of these are unskilled or partially skilled workers; a skilled worker receives a good wage. *Engine drivers.*—The wages vary chiefly according as employment is on goods, passenger, or express trains. *Painters.*—Those earning less than 24*s*. are labourers or only partly skilled; those at 30*s*. or more are foremen, or men with responsibility. *Other building trades.*—The low paid men are labourers or men who, without being apprenticed, have attained a certain degree of skill, and receive a wage greater than that of an unskilled labourer. *Blacksmiths.*—The higher wages are for piece work; those under 28*s*. for "improvers." *Porters.*—The usual wage for a railway porter is 17*s*. to 20*s*. a week; but porters working on the passenger platform, when working at day, "consider it a very poor week when they do not double this sum by tips." The men with wages ranging from 18*s*. to 24*s*. per week are "goods" porters, and get no tips. *Railway works.*—Under this heading are classed together all kinds and grades of workers, both skilled and unskilled. It is difficult to draw a line between them, as many labourers, although they have not served an apprenticeship, are doing practically skilled work, though at a lower wage than the man who has served his apprenticeship.

The Average Weekly Wages of Adult Males in York in 1899.

Trades.	Under 18s.	18s.	19s.	20s.	21s.	22s.	23s.	24s.	25s.	26s.	27s.	28s.	29s.	30s.	31s.	32s.	33s.	34s.	35s.	36s.	37s.	38s.	39s.	40s.	42s.	45s.	46s.	50s.	52s.	55s.	60s.	Totals.
Confectioners	—	1	—	17	1	8	1	32	4	17	1	9	—	32	—	3	1	3	3	1	—	—	—	14	—	—	—	—	—	—	—	148
Engine drivers	—	—	—	—	—	—	—	—	—	—	—	—	—	14	—	—	—	1	9	7	1	1	—	134	—	3	—	4	—	—	—	174
Firemen	—	—	—	3	—	2	5	20	13	21	—	66	1	52	—	4	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	188
Painters.........	—	2	1	6	—	6	2	230	8	39	76	22	4	54	1	3	—	2	2	1	—	—	—	—	—	—	—	—	—	—	—	459
Bricklayers, slaters	—	—	—	2	—	1	—	—	2	—	1	—	—	219	—	7	—	—	10	1	—	—	—	7	—	—	1	1	—	—	—	252
Joiners	—	—	—	8	—	2	2	6	14	10	9	14	—	197	—	334	—	9	4	2	3	1	3	8	—	—	—	—	—	—	—	616
Cabinetmakers	—	—	—	1	—	—	—	—	1	3	1	2	—	36	—	4	—	10	3	—	—	—	—	1	—	—	—	—	—	—	—	62
Boilersmiths, coppersmiths	—	—	—	—	—	—	—	—	1	1	—	4	—	16	—	6	—	1	3	41	—	1	—	1	—	1	—	—	—	—	—	76
Blacksmiths ...	—	1	—	—	—	—	—	1	3	—	3	19	—	62	—	7	1	11	8	2	—	—	—	2	—	—	—	—	—	—	—	120
Tinners, whitesmiths	—	1	—	1	—	1	—	6	3	2	—	26	—	41	—	1	—	—	2	—	—	—	—	2	—	—	—	—	—	—	—	86
Plumbers, gasfitters ...	—	—	—	2	—	—	—	3	1	3	1	56	—	26	—	1	1	—	1	—	—	—	1	2	—	—	—	—	—	—	—	98
Plasterers	—	—	—	—	—	—	—	1	1	—	—	—	—	44	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	46
Masons	—	—	—	—	—	—	—	2	—	1	—	1	—	61	—	1	—	—	1	—	—	—	—	1	—	—	—	—	—	—	—	68
Tailors	—	2	—	6	—	2	—	45	6	12	59	2	—	70	—	1	—	1	7	—	—	—	—	6	—	—	—	—	—	—	—	219
Railway porters	—	2	—	20	—	1	13	7	7	4	—	—	—	19	—	—	1	43	—	—	—	—	—	2	—	—	—	—	—	—	—	119
Labourers	342	505	19	1,181	16	320	245	75	47	17	—	4	—	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2 775
Clerks...........	12	7	—	58	1	10	4	27	66	40	6	4	—	316	—	13	2	3	49	1	—	—	—	72	1	1	—	8	2	1	2	706
Miscellaneous	49	26	2	195	7	66	160	317	175	125	15	82	4	484	5	20	2	8	78	9	—	—	—	77	—	1	1	3	1	—	—	1,912
Guards, goods and passenger	—	—	—	—	—	—	—	—	3	8	1	1	—	32	1	5	—	6	23	6	—	1	—	45	—	—	—	—	—	—	—	137
Printers' compositors	—	—	—	2	—	—	—	1	3	—	3	12	—	86	2	8	1	1	7	—	1	—	—	2	—	—	—	—	—	—	—	129
Railway works (unclassified)	4	7	5	30	6	29	67	37	36	32	22	147	1	533	1	46	—	33	49	20	2	1	—	44	—	1	—	—	—	—	1	1,154
Totals	407	554	27	1,532	31	448	499	810	394	330	198	471	10	2,398	10	464	9	132	260	91	7	5	4	420	1	7	2	16	3	1	3	9,544

IV.—*Report on the Agricultural Returns for* 1901.

THE annual volume of the *Agricultural Returns* for 1901 has been presented to Parliament by the Board of Agriculture (Cd–1121). It may be noted that the information contained therein has been again to some extent increased, the tables of the new volume now numbering 138. The usual particulars as to the acreage and produce of crops and number of live stock in Great Britain which have been previously issued to the public by instalments at various periods as the returns were completed, are given in detail in this parliamentary publication for permanent record. The other sections comprise statistics of the prices of corn and other agricultural produce, the weather of the British Isles in the past season, the supply of cattle, sheep, and pigs at the markets, scheduled under the Markets and Fairs (Weighing of Cattle) Act, the imports and exports of agricultural produce, and a series of tables embodying the latest available information of the agriculture of the various British Dominions beyond the seas, and of foreign countries.

In his introductory report, Major Craigie states that the figures relating to crop areas and live stock in Great Britain were compiled from 514,635 separate schedules, representing holdings of more than one acre of land, and from 10,985 supplementary schedules from owners of live stock who either occupied no agricultural land or whose holdings did not exceed one acre.

The total extent of land and water in Great Britain stands at 56,786,000 acres, and of this surface nearly 13 million acres represent the estimated area of mountain and heath land, which is, in a greater or less degree, utilised for the maintenance of sheep and cattle. As a further area of 2,726,000 acres in great Britain is estimated to be occupied by woods and plantations, while the total acreage of crops and grass returned at the present time as cultivated amounts to 32,417,000 acres, it follows that about 85 per cent. of the surface of the country is employed for the purposes of agriculture and forestry.

Allusion is again made to the decline of arable cultivation as forming the most distinctive movement of the later years of the last century, and the varying intensity, in different localities, of this movement is indicated. In the different parts of Great Britain the change from the period 1867-71 to 1897-1901 is shown thus:—

	Arable Area in 1867-71.	Per Cent. of Total Cultivated Area.	Arable Area in 1897-1901.	Per Cent. of Total Cultivated Area.
	Acres.	Per cent.	Acres.	Per cent.
England	13,511,000	58	11,415,000	46
Wales	1,074,000	43	897,000	32
Scotland	3,388,000	76	3,498,000	71
Great Britain................	17,973,000	59	15,810,000	49

Turning to the special features of the 1901 figures, Major Craigie observes that the diminution by 144,000 acres, or nearly 8 per cent., of the wheat area in Great Britain, following upon similar losses of 156,000 acres and 101,000 acres respectively in the two years immediately preceding, has reduced the acreage practically to the level of 1896, a year in which, with the single exception of 1895, the smallest breadth of wheat land was recorded in Great Britain.

By adding to the statistics collected for Great Britain the figures supplied for Ireland, and also those furnished for the Channel Islands and the Isle of Man, the following total areas for the United Kingdom are arrived at:—

United Kingdom.	1899.	1900.	1901.
	Acres.	Acres.	Acres.
Area under all crops and grass	47,796,000	47,795,000	47,761,000
Permanent pasture	28,092,000	28,267,000	28,374,000
Arable land	19,704,000	19,528,000	19,387,000
Corn crops	8,804,000	8,708,000	8,477,000
Green crops	4,274,000	4,301,000	4,231,000
Clover and rotation grasses	6,115,000	6,025,000	6,141,000
Flax	35,000	48,000	56,000
Hops	52,000	51,000	51,000
Small fruit	77,000	79,000	81,000
Bare fallow	347,000	316,000	350,000

By a similar process the estimated total production in the United Kingdom of the principal crops is shown to be as under:—

CROPS.	1899.	1900.	1901.
	Qrs.	Qrs.	Qrs.
Oats	20,767,000	20,642,000	20,147,000
Barley	9,317,000	8,568,000	8,455,000
Wheat	8,408,000	6,790,000	6,741,000
	Tons.	Tons.	Tons.
Potatoes	5,837,000	4,577,000	7,043,000
Turnips	20,370,000	28,387,000	25.298,000
Mangold	7,604,000	9,650,000	9,226,000
Hay (all sorts)	12,898,000	13,742,000	11,358,000

The results of the corn harvest of 1901 were generally unsatisfactory, although the wheat crop gave a better return than was at first anticipated, and proved, eventually, above the average. A deficiency of turnips was only partially redeemed by a good yield of mangolds, while the hay crop, both from clover and meadows, was unusually short. Almost the only set off to these unfavourable features of the past year was a heavy crop of potatoes, and, in the limited area affected, a large yield of hops. The relative position of the year's crops to those of each of the preceding ten years is shown in the following table:—

Year.	Wheat. — Average 1891-1900, 29·93 Bushels per Acre = 100.	Barley. — Average 1891-1900, 33·13 Bushels per Acre = 100.	Oats. — Average 1891-1900, 38·47 Bushels per Acre = 100.	Potatoes. — Average 1891-1900, 5·85 Tons per Acre = 100.	Turnips and Swedes. — Average 1891-1900, 12·89 Tons per Acre = 100.	Hay (Clover). — Average 1891-1900, 27·56 Cwts. per Acre = 100.	Hay (Permanent Grass). — Average 1891-1900, 22·20 Cwts. per Acre = 100.
1891	104	103	101	98	103	104	106
'92	88	104	101	99	110	93	86
'93	87	87	93	113	103	68	57
'94	103	104	108	95	105	118	129
'95	88	96	96	114	100	98	86
'96	113	102	96	108	96	88	79
'97	97	99	100	88	109	105	113
'98	116	108	106	107	93	122	132
'99	109	103	101	96	72	100	103
1900	95	95	99	83	110	105	110
1901	103	94	96	109	95	92	75

The returns of the number of live stock enumerated on 4th June, 1901, showed a general decline on the preceding year, the only exception being among horses, which displayed a slight increase of 1 per cent.

Tables are given showing the average price in 1901 of wheat, barley, and oats at each of the markets scheduled under the Corn Returns Act, 1882, as well as the prices in England and Wales for a long series of years, and Major Craigie notes that while the price of wheat remained unusually steady during the past year, the prices of barley and oats showed a slight rise. The substitution of the prices of 1901 for those of 1894 in the computation of the septennial tithe average resulted in a slight increase, for the first time since 1877, in the yearly value of tithe rent-charge.

After a brief survey of the general course of corn prices in recent years in this country, a comparison is made with the values prevailing in two neighbouring countries, as under:—

Period.	England. Per Qr.	France. Per Qr.	Belgium. Per Qr.	Period.	England. Per Qr.	France. Per Qr.	Belgium. Per Qr.
	s. *d.*	*s.* *d.*	*s.* *d.*		*s.* *d.*	*s.* *d.*	*s.* *d.*
1872-76	52 7	52 11	54 2	1887-91....	32 7	43 9	34 8
'77-81	47 4	51 9	50 9	'92-96....	25 9	35 11	27 2
'82-86	37 3	41 5	39 2	'97-1901	28 8	38 4	30 5

As regards prices of commodities other than corn, the figures ascertained from returns made under the Weighing of Cattle Act are utilised, and the following comparison is made of the average price per cwt. live weight of prime cattle in Great Britain for each month of the past three years :—

Months.	1901.	1900.	1899.	Months.	1901.	1900.	1899.
	s. *d.*	*s.* *d.*	*s.* *d.*		*s.* *d.*	*s.* *d.*	*s.* *d.*
January	36 2	37 2	34 6	July	36 4	38 8	37 0
February	35 10	36 8	34 8	August	36 0	37 8	35 6
March	36 0	36 0	34 10	September....	35 6	36 10	34 2
April	36 0	35 10	35 2	October........	35 2	36 2	34 2
May...............	36 0	37 4	35 6	November....	35 4	36 0	35 2
June	36 4	39 2	37 0	December	36 6	36 8	37 2

The figures relating to the imports and exports of agricultural produce have been re-arranged in the tabular portion of this Year Book, and are given in fuller detail than previously, and Major Craigie, in discussing the sources of our dead meat supplies, makes a somewhat interesting comparison of the relative proportion and growth of the imports coming from Foreign Countries and British Possessions respectively. This dead meat trade in the aggregate has rapidly increased of late years, and now represents 49½ lb. per head of the population of the United Kingdom, compared with 27 lb. in 1893. The annual average credited to the chief Foreign sources of supply in the past twenty years has varied as under :—

Period.	United States of America.	Argentina.	Denmark.	Holland.	Total from these Countries.
	Tons.	Tons.	Tons.	Tons.	Tons.
1881–85....	232,000	2,000	4,000	7,000	245,000
'86–90....	254,000	17,000	22,000	12,000	305,000
'91–95....	309,000	32,000	42,000	21,000	404,000
'96–1900	435,000	61,000	63,000	41,000	600,000
1901	524,000	108,000	63,000	50,000	745,000

From British Possessions the receipts of dead meat during the same periods have averaged as follows :—

Period.	Canada.	Australia.	New Zealand.	Total.
	Tons.	Tons.	Tons.	Tons.
1881–85	11,000	17,000		28,000
'86–90	18,000	7,000	30,000	55,000
'91–95	16,000	37,000	51,000	104,000
'96–1900	34,000	70,000	75,000	179,000
1901...............	30,000	46,000	87,000	163,000

Applying a similar mode of analysis to the imports of wheat and flour expressed as grain, it is pointed out that the receipts from British Possessions during the past seven years were as under :—

Year.	India.	Canada.	Australia.	New Zealand.	Total British.
	Tons.	Tons.	Tons.	Tons.	Tons.
1895	440,000	255,000	179,000	—	874,000
'96	106,000	315,000	—	—	421,000
'97	29,000	347,000	—	—	376,000
'98	477,000	387,000	11,000	—	875,000
'99	410,000	436,000	151,000	35,000	1,032,000
1900	—	400,000	146,000	57,000	603,000
'01	167,000	429,000	310,000	69,000	975,000

For the same period the supplies from Foreign Countries varied as follows:—

Year.	United States.	Argentina.	Russia.	Austria-Hungary.	Other Foreign Countries.	Total Foreign.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1895........	2,266,000	572,000	1,158,000	91,000	407,000	4,489,000
'96	2,639,000	250,000	863,000	96,000	713,000	4,561,000
'97........	2,707,000	47,000	756,000	79,000	469,000	4,058,000
'98........	3,104,000	201,000	320,000	51,000	170,000	3,846,000
'99........	3,011,000	576,000	126,000	72,000	108,000	3,893,000
1900	2,871,000	938,000	225,000	81,000	212,000	4,327,000
'01........	3,343,000	415,000	129,000	56,000	135,000	4,078,000

The total quantity of wheat and flour received in 1901 thus slightly exceeded 5 million tons, or more than in any previous year since 1893.

In dealing with Foreign and Colonial Statistics, fresh information has been added in several instances, the results of new statistical enquiries respecting crop areas in Belgium and in Russia having been brought into account, while additional details of the live stock of various other European countries have been furnished. The increase of cattle in Russia and in Germany is specially noticed, besides large additions to the number of swine in the latter country. On the other hand, the continued decline in the flocks of Continental countries is again a matter for comment, and a heavy loss of 28 million sheep in the last decade in Australia is reported.

The Report closes with some remarks on the agricultural portions of the census of the United States in 1900, which have just been received in this country. The somewhat startling figures of this investigation, pointing to the existence in the States of over 69 million head of cattle, nearly 62 million head of sheep and 64 million head of swine, are, however, shown to be in no way capable of exact comparison with any earlier enumerations made. Despite the excess of these figures over the earlier official estimates, it is stated that the American Census Statistician considers his large totals to represent a reduction of some 7 per cent. in the cattle and 2 per cent. in the number of wool-bearing sheep within the past decade on the farms and ranges of the United States.

V.—*Report of the Committee to Inquire into the Statistics available as a basis for Estimating the Production and Consumption of Meat and Milk in the United Kingdom.*

THE following Report of this Committee, appointed by the Council in 1900, was presented to the Council at its meeting in June, and by its order communicated to the Annual General Meeting on the 17th June:—

Interim Report to the Council, June, 1902.

THIS Committee was appointed by the Council on 20th November, 1900, to inquire into the statistics available as a basis for estimating the production of meat and milk in the United Kingdom.

Having considered generally the sufficiency of the statements put forward at various times of the amount of meat and milk produced in the United Kingdom, the Committee came to the conclusion that it was desirable, if possible, to collect entirely fresh data, with the view of either revising the calculations already existing, or, if necessary, of constructing new estimates. By the liberality of two of their members, Sir James Blyth and Mr. Barfoot-Saunt, supplemented by a grant from the Society's funds, they were enabled to incur the expense of a special inquiry on an extended scale.

In the first instance they drew up a Schedule (A) addressed to farmers, requesting information as to the annual number of births, and of deaths by accident or disease, among cattle, sheep, and pigs, the numbers of cows in milk, the average quantity of milk given per cow, the proportion of milk sold as such or otherwise utilised, and some other subsidiary points. Over 3,000 of these schedules were sent to farmers in various parts of the United Kingdom, and their co-operation requested. The amount of assistance rendered in response to this request was perhaps less than might have been anticipated, in view of the evident importance of the subject to British agriculturists, the total number of schedules returned being 289. The information contained therein is however of great value, and the thanks of the Committee are due to those who were good enough to furnish it. They are now endeavouring to further elucidate, by individual inquiries among experts, certain points on which the information appears to be inadequate.

A second Schedule (B) was sent to a number of butchers and meat salesmen in different parts of the country, its object being to obtain precise information as to the average weight of cattle, sheep, and pigs when slaughtered. The response to this inquiry was relatively more satisfactory than to Schedule (A), 81 replies having been received out of 450 already sent out. So far as they go the replies furnish valuable information on a point which does not appear previously to have formed the subject of extensive local inquiry; but the Committee are not as yet satisfied that these replies are sufficiently representative of the whole country, and they are therefore attempting to obtain further returns from those districts for which the information is at present incomplete. In any calculation of the home meat supply the extreme importance of the figure adopted as representing the average weight of the animals, when slaughtered, necessitates great care in ensuring that the data upon which any such figure is based are accurate and sufficient.

The Committee, in making their calculations of the number of cattle, sheep, and pigs slaughtered annually, have decided to adopt the Agricultural Returns as the only available basis.

The method of utilising these figures is as follows :—

The Agricultural Returns being collected on 4th June, the year must be reckoned from that date.

(I.) BEEF CATTLE.

From the total number of cattle enumerated at the beginning of the year,

Deduct—

(a.) *The number estimated to have died during the year.*

(b.) The number of cattle enumerated as over 1 year old at the end of the year.

The remainder is the number of those enumerated at the beginning of the year which were slaughtered during the year.

(II.) CALVES.

But a certain number of calves are born and killed for veal without coming into the annual returns.

To ascertain this number, estimate *the number of calves which will be produced during the year from the cows and heifers enumerated at the beginning of the year,*

From this deduct—

(a.) *The number estimated to have died during the year.*

(b.) The number of cattle enumerated as under 1 year old at the end of the year.

The remainder is the number of calves killed for veal during the year, and not included in the official enumeration.

(III.) SHEEP.

From the total number of sheep and lambs enumerated at the beginning of the year,

Deduct—

(a.) *The number estimated to have died during the year.*

(b.) The number enumerated as 1 year old and above at the end of the year.

The remainder is the number of enumerated sheep and lambs slaughtered.

From this deduct *the number estimated to be sold for lamb.*

The remainder is the number of sheep slaughtered during the year.

(IV.) LAMBS.

To ascertain the number of lambs which are slaughtered, but not enumerated,

Estimate *the total number of lambs produced by the number of breeding ewes returned at the end of the year.*

Deduct—

(a.) *The number estimated to have died during the year.*

(b.) The number enumerated as under 1 year old at the end of the year.

Add *the estimated number of enumerated lambs slaughtered* (as in III above).

The result is the number of lambs slaughtered during the year.

(V.) PIGS.

To the total number of pigs enumerated at the beginning of the year,

Add *the number estimated to be produced during the year by the number of breeding sows returned at the beginning of the year.*

Deduct—

(a.) *The number estimated to have died during the year.*

(b.) The total number enumerated at the end of the year.

The remainder is the number of pigs slaughtered during the year.

In this calculation the factors which have to be supplied by estimates based on the data collected by the Committee are indicated by *italics*.

If the number of animals of each class slaughtered, as ascertained by the above method, be multiplied by the estimated average weight in each case, the result will represent the quantity of beef, veal, mutton, lamb, and pigmeat respectively produced in the United Kingdom during the year.

The Committee refrain from indicating the conclusions to which their inquiries at present point, until they have exhausted every means of testing the results tentatively obtained; but it may be mentioned that the figures at present available appear to suggest that estimates which have been hitherto commonly accepted, may have erred in the direction of somewhat magnifying the home production of certain classes of meat.

As regards the total production of milk, the Committee have accumulated much information, but they are not satisfied with the present results of their inquiries, especially as regards the quantity of milk respectively sold as such, or manufactured into butter or cheese. On these points they await further data.

The Committee are anxious to obtain not only information furnished by those engaged in production, but also information as to the consumption by different classes of the people of the commodities coming within the scope of this inquiry. By that means it should be possible, after duly taking account of imported and exported produce, to obtain a valuable check upon estimates constructed from the data furnished by producers. So far, however, the Committee have not been able to obtain new data of consumption, but they propose to make a further attempt to do so. In this attempt they would appeal to all who are interested in this subject, and especially to the Fellows of this Society, for co-operation. A simple form of Schedule (C) has been drawn up in which heads of households are asked to state the amount of beef, veal, mutton, lamb, pork, bacon and ham, cheese, butter and milk consumed by their household in a week, or longer period. It is proposed to distribute these widely, and the Committee hope that they may be assisted in the work of attempting to obtain replies by all who are interested in the important question of the food supply of the people. The Secretary of the Society, or any member of the Committee, will gladly furnish a supply of the schedules.

Appended to this report are copies of the first two of the three Schedules of Inquiry which have been mentioned.

On behalf of the Committee,

R. Henry Rew.

3rd June, 1902.

APPENDIX.

SCHEDULE A.

Meat and Milk Production.

1. What number had you on 5th June, 1899, and 4th June, 1900 (being the months in which the official Agricultural Returns were collected), respectively, of Cattle, Sheep, and Pigs?
   [If you can also add the number on 1st January, 1901, the information will be esteemed.]
   (*a.*) CATTLE—Cows and heifers, in milk or in calf?
   (Of these how many heifers were in calf for the first time?)
   Other cattle—
   Two years and above?
   One year and under two?
   Under one year?
   (*b.*) SHEEP—Ewes kept for breeding?
   Other sheep:—
   One year and above?
   Under one year?
   (*c.*) PIGS—Sows kept for breeding?
   Other pigs?
2. What was the total number of deaths, between 5th June, 1899, and 4th June, 1900, from natural causes or accident (rendering the carcass unfit for the butcher), of
   Cattle?
   Sheep?
   and Pigs?
   distinguishing in each case animals of under one year old from those above that age?
3. What number were born between 5th June, 1899, and 4th June, 1900, and of these how many were killed or died before 4th June, 1900, and thus never came into the official Agricultural Returns?
   Calves?
   Lambs?
   Pigs?
4. Of the total number of cows and heifers in your herd, how many were actually milked during the year?
5. What was the total quantity of milk (in imperial gallons) produced by your herd in the twelve months, including that taken by or fed to calves?
6. What is the *average* annual yield (in imperial gallons) of milk per cow or heifer in milk, including that taken by or fed to calves?
7. What proportion of *whole* milk is
   (*a.*) Sold or consumed as such?
   (*b.*) Made into butter?
   (*c.*) Made into cheese?
   (*d.*) Taken by or fed to calves?
   (*e.*) Sold for other purposes, *e.g.*, condensed milk, &c.
8. What quantity of milk is usually required to make—
   1 lb. of butter?
   1 lb. of marketable cheese?

Note.—In answering Questions 6, 7, and 8, those to whom the schedule was sent were asked to give figures relating to their own case, and also, if possible, to furnish an estimate of the average figures of the district in which they resided.

Supplementary Inquiries.

9. Please state the breed or character of your stock—
   Cattle.
   Sheep.
   Pigs.
10. What was the largest quantity of milk produced by any one cow during the year?
    For how long was such cow in milk?
    What was the smallest quantity of milk produced by any one cow during the year?
    For how long was such cow in milk?
11. What is the average time for your cows to remain in milk?

SCHEDULE B.

British Meat Production.

1. At what figures do you estimate the *average* age, in years and months, and weight (giving the fasted live weight and the weight of dressed carcasses) of the undermentioned classes of animals passing through your hands in the course of a year?
    - (i.) CATTLE—
        - (*a*.) Bullocks, heifers, oxen, or steers.
        - (*b*.) Draft cows.
        - (*c*.) Bulls.
        - (*d*.) Calves.
    - (ii.) SHEEP—
        - (*a*.) Wethers.
        - (*b*.) Ewes.
        - (*c*.) Lambs.
    - (iii.) PIGS—
        - (*a*.) Bacon pigs.
        - (*b*.) Porkers.
2. Please state approximately the number of animals (per annum) on which the above figures are based, distinguishing cattle, sheep, and pigs.

VI.—*Notes on Economical and Statistical Works.*

The Principles of Political Economy. By Henry Sidgwick. Third edition. 592 + xxiv pp., 8vo. London: Macmillan and Co., 1901.

The posthumous appearance of the third edition of this well-known treatise is a melancholy reminder of the loss which the economic world has sustained by the death of its distinguished author. Dr. Keynes, who has discharged with the loyalty and fulness of knowledge of long intimacy the duty of preparing the book for the Press, states in the preface that "certain modifications," which Professor Sidgwick had noted as "desirable," have been introduced; but these, he adds, are not "numerous or of fundamental importance." The chief changes in the new edition consist of the "incorporation" in the two chapters on the "scope" and on the "method" of political economy of matter contained in articles contributed by Professor Sidgwick to Mr. Palgrave's *Dictionary of Political Economy*. Shortly before his death he repeated a wish to which he had previously given expression that such use should be made of these articles. We think that the chapters in question have been improved by the incorporation of this additional matter. The argument has been rendered more complete; the conclusions are now more positively defined, and can therefore be more easily grasped. The new matter, indeed, is complementary, and not contradictory, of the statements of the earlier editions. For Professor Sidgwick was so careful in forming, and so cautious in expressing, his opinions, that it was unlikely that he should find occasion, like more precipitate and less comprehensive thinkers, to correct himself; and we may derive some consolation for his untimely decease from the reflection that we now probably possess his treatise in the final, or nearly the final, form in which he would have left it. This, we may say, is certainly the case with regard to the essentials of his treatment; but it is possible—and the alterations in this edition confirm this belief—that the tension to which the reader is sometimes put by the combined thoroughness and compression of the reasoning might have been further relieved by some small changes of expression. It is not, as careless or uninformed students might suppose, that Professor Sidgwick was at such great pains to introduce into older economic doctrine the qualifications required by subsequent and more penetrating analysis that he failed to reach unambiguous conclusions; but undoubtedly he makes a demand on the sustained attention of his readers, to which the tyro in economics may find it hard or impossible to respond. His treatise is certainly one for advanced rather than elementary students; but it has taken a place among that limited class of rare volumes which an economist anxious to prove his competence cannot afford to neglect. The position which it occupied when it first appeared has, it is true, been somewhat affected by the publication of subsequent treatises, and teaching of which it gave some of the earliest public indications has since been expounded more fully elsewhere. But its value is not diminished as a mental discipline which must improve, if it is not an essential part of, the equipment of the trained economist, and it would be hard, if not impossible, to find at the present moment in the English language any complete or effective substitute for Professor Sidgwick's philosophic, searching, and suggestive examination of what he distinguishes as the "art of political economy." In dealing with the "science" of economics his treatise may perhaps appear more valuable when regarded as the excursion of a singularly erudite and judicious general philosopher into the special department of economics; but his treatment of the "art" of political economy cannot, we imagine, be superseded, and it exhibits his characteristic qualities in their most favourable guise. The new matter incorporated in the early chapters of this edition on the "scope" and on the "method" of economics affords further conspicuous illustration of those same admirable qualities. They compel us to realise more vividly than we had done the full extent of the blow, which a mysterious fate dealt to English economics, when it removed Professor Sidgwick from the scanty band of English economists at a time when it is likely that a more active interest in economic study will be more generally diffused. Reading these pages afresh, we cannot but feel how opportune his sage and sincere counsel would have proved at critical moments. We are reminded of the marvellous sanity and real impartiality of his judgment; we remember how, by a rare but happy combination, he could, when necessary, draw the wisest and most positive conclusions in matters of practice from the most profound and comprehensive acquaintance with all sides of a theory. An almost perfect justness of balance, an inexhaustible fulness of knowledge, and a searching depth of thought, were perhaps the most prominent qualities of Henry Sidgwick, and it is by the exhibition of these qualities in the work, of which the third edition is before us, that he rendered such lasting service to the cause of economic thinking. His name must on that account remain conspicuous in the front rank of English economists of the last quarter of the nineteenth century, and his treatise will long be read with advantage by advanced students of the science.

A Short History of Coins and Currency. By Lord Avebury. 138 + x pp., 12mo. London: John Murray, 1902.

Lord Avebury has, in a very real sense, supplied a want which has been long felt by this short history. His little book forms one of the earliest volumes of the "Home and School Library," a new series now being published; and we can imagine few more appropriate or valuable contributions to such a series. For Lord Avebury, for the first time so far as we know, has furnished, in a compendious and inexpensive form, an authoritative account of the history of British coinage. This is a topic on which an extraordinary amount of ignorance prevails with the plain British citizen; and this ignorance is largely due to the circumstance that it has hitherto hardly been possible, without having recourse to recondite and elaborate special numismatic treatises, to penetrate to the history of British currency before quite recent times. Lord Avebury has now made such information accessible, and we should be grateful for his book if it contained alone the second chapter of the first, and the first chapter of the second, of the two parts into which it is divided. In those chapters he deals with the coinage of Britain and with the weights of coins. But to these two more are prefixed and appended, one on the origin of money, and the other on bank notes and banking. The best authorities have been consulted, the practical experience of the writer himself has been utilised, the information is presented in simple and attractive language, and the hundred and twenty-five illustrations contained are, we think, as adequate and representative of the chief varieties of coins both early and late as they are admirably designed and excellently executed. Lord Avebury has contrived with great skill to tell a lucid story of sustained interest on what is sometimes considered a dry and perplexing subject; and he has thereby rendered no small service to economic teachers anxious to find and recommend a connected history of the currency of this country contained within reasonable dimensions.

Western Civilisation in its Economic Aspects. By W. Cunningham, D.D. I. *Ancient Times.* 220 + xii pp. II. *Modern Times.* 300 + xii pp, crown 8vo. Cambridge: at the University Press, 1898 and 1900.

In these two volumes, which form part of the Cambridge Historical Series, Dr. Cunningham has brought together in a connected story a great amount of scattered information, which hitherto could only have been gained by long and arduous research in multitudinous directions. Nor, we think, would any but an expert historian know where to look for much of the material which he has utilised, or be able to appraise its value when discovered. Dr. Cunningham himself acknowledges, in the preface to the earlier of the two volumes, that his chief difficulty has been "lack of information." "The social and economic side of life," he remarks, "was so familiar to their contemporaries, and was often so uneventful, that chroniclers have rarely thought it worth while to describe it particularly. We have to depend on incidental remark rather than on detailed and deliberate description." "Even when distinct information on some economic topic has been recorded, we have not sufficient knowledge of the circumstances to be able to interpret the evidence with confidence;" and perhaps the "hardest task of all is to find suitable phraseology in which to describe and discuss the reported phenomena," for our economic terms are appropriate alone to those arrangements of modern society with which we are acquainted. Such then, in the author's words, are the chief obstacles to be overcome in narrating the story of Western Civilisation in its economic aspects in ancient times; and the difficulties supply a measure of the success which Dr. Cunningham has achieved in overcoming them. For there can be no doubt that in this first volume he has succeeded in producing an interesting and connected picture of the economic side of ancient civilisation, that he has gathered in intelligible orderly form a great amount of material relating to the economic arrangements first of Egypt, Judæa, and the Phœnicians, and then of the Greeks, and, lastly, of the Romans, and that he has thus filled a gap which has long been evident in our economic and historical knowledge. We ourselves are disposed to think that he has attained the most marked success in this earlier volume; but the reason may be found in the fact that here he has dealt with periods necessarily more obscure and less familiar, and we are the more grateful for the illumination he has been able to throw upon them. When in his second volume he comes to treat of modern times, the difficulty by which he is specially confronted is not so much a lack of information as a necessity for strict selection; and it is not so easy here as in the case of ancient civilisation to discover a satisfactory scheme of arrangement. From a book dealing with Christendom, and discussing in successive chapters the "foundations of society," "natural and money economy," and "Christian relations with Heathen and Moslem," he passes to a book treating of "nationalities," and then to a final book showing the "expansion of western civilisation." From the "reconstruction and remodelling of society" under the influence of Christianity, he proceeds to the "age of discovery," when "economic policy" was devoted to the promotion of national power, and the rival commercial empires of the Portuguese, the Spaniards, the Dutch, and the French successively gained and lost predominance, to give way to our own country, and to be followed by that "age of invention and of the general application of capital" in which we live. He distinguishes three stages of progress corresponding to these three periods of time, in man's knowledge, firstly, of *himself*, secondly, of his *place*, and thirdly, of his *powers* in the world; and of the first of these the regulation of *labour*, of the second the development of *land*, and of the third the utilisation of *capital*, have been characteristic features. In this way he contrives with skill to impart method to the discussion; but his scheme of division is less easy to grasp and less obvious to follow than the distinction adopted in the earlier volume between civilisation before the Greeks and Romans and civilisation under those two peoples respectively. Both the volumes, however, reflect on every page the wide erudition and careful research which Dr. Cunningham has always brought to the study of economic history. Both, we are convinced, will be gratefully welcomed and constantly used by teachers and students alike. Both, we hold, are singularly opportune in their appearance at a time when Englishmen are beginning to recognise that the commercial and industrial supremacy they have for long enjoyed is not unquestioned, and that if they would maintain their economic prosperity they must look carefully into the foundations on which it is built. For such an inquiry they must equip themselves not merely by the comparative examination of the existing structure of commerce and industry in those German and American nations which promise to be our most formidable competitors, ready to profit by their mistakes, and to learn from their successes, but they must also bestow attention on the economic history of the past, where they can follow causes to their actual and not merely to their probable effects, and study the completed operation of economic forces and gauge their proved significance for good or ill. For "commercial education" of this character Dr. Cunningham, in the volumes now before us, has supplied two admirable text-books.

Corn Trade Year-Book, 1901-02: *Review of the World's Grain Trade*. By George J. S. Broomhall. 216 + xx pp., 8vo. Liverpool: Northern Publishing Company, 1902.

The last issue of this year-book took place in 1896; and in the present issue a brief summary is given of the five seasons which have since intervened. The most important incident of this period has been the corner in wheat attempted by Mr. Joseph Leiter in 1898, which after a temporary success finally broke down. During the corner the price of wheat rose once more to the old figure of 40*s*. a quarter; but the prediction made by the late Sir James Caird in 1880, that arable land in Great Britain would always command a rent of 30*s*. an acre, because the cost of carriage of wheat from abroad would amount to at least that figure per ton, has, the compiler of the year-book shows, been disappointed by an "all-round freight-rate" in 1900 of some 15*s*. only. He does not indeed believe that the decline in the price of wheat can be solely attributed to the fall in the rate of rail or ocean freights; and a considerable portion of the "summary" is devoted to the establishment of this important point. Between 1872 and 1900 this single cause will only account for 8*s*. a quarter, or not one-third of the decline. The summary is followed by two sections, the first of which records the statistics of each country separately, and the second shows tabularly the general movement of grain and flour weekly or annually. The accounts of the different countries contain many interesting facts on which the economic prophet may ponder with advantage; the tables are compiled from the most trustworthy sources which are accessible, and are so complete and representative that the statistician, we imagine, will hardly need to look elsewhere when he seeks for ready information on the supply of what is still the most important article of human food.

Prosperous British India: a Revelation from Official Records. By William Digby, C.I.E. 661 + xlvi pp., 8vo. London: T. Fisher Unwin, 1901.

In this book Mr. Digby presents for the consideration of his readers the "dark side" of English rule in India. "There are," he tells us in his preface, "two contrary views regarding India," and his book has been written with the object of bringing them to a "definite issue." "One is always referring to the increasing prosperity of the country and people, and claiming unstinted praise for England as the creator of this prosperity; the other is incessantly dilating upon the rapidly growing and now alarming impoverishment of both country and people," and "declares that by the principles of our rule, deliberately adopted, the impoverishment is made inevitable." Both views, he maintains, cannot be right; nor is there any "middle course which would reconcile" them. He himself thinks that the latter is the right view, and his book is devoted to the endeavour to prove its correctness by evidence taken in the main from published and unpublished official documents, and also from unofficial writings of recognised authorities. He contends that the position of India at the close of the nineteenth century was worse than it was at the beginning of the century, that its agricultural and industrial wealth is not in the possession of the mass of the natives, that famines have become more frequent and disastrous, that the burden of the "tribute" paid to England is very serious, and the drain of India's wealth both real and constant. He recognises that the intentions of Indian administration have not been always bad; but he thinks that they have generally been mistaken, that they have frequently been directed by principles inuring to the advantage not of the people themselves, but of the nation which was governing them, and that official optimism has seldom faced or recognised the real facts of the situation. This it is which he is determined to do. The figures themselves are, he contends, when truly stated and candidly examined, sufficiently alarming; but the facts below the figures are often worse. The actual poverty of the great masses of the inhabitants of India is distressing; and it is not realised by many, or perhaps by most, of those who write and speak about our Indian Empire. Such is the argument of his book; and, whether his readers are or are not convinced by his contentions, they will recognise the zeal which has inspired his work, and they will allow that he has spared no pains to present them with an exhaustive statement of his case.

Crime in its Relations to Social Progress. By Arthur Cleveland Hall, Ph.D. 427 + xvii pp., 8vo. New York: The Columbia University Press. $3.

The fifteenth volume of the well-known Columbia University Studies in Political Science is occupied by a careful study of the relation of the amount of crime to social progress. Dr. Hall defines crime in the following way: "First, the act must be one that society abhors, and desires to punish as a wrong against its welfare. Second, the act must be punished often enough to make the displeasure of society evident, and its deterrent force plainly felt. Then, and not till then, does the action become a crime." This definition is important, because Dr. Hall's conclusions, which at first sight are rather surprising, depend upon it. The evolutionary function and usefulness of crime (as defined above) is liable to be forgotten; but on reflection we can see that intelligent social selection may be a powerful force for the improvement of society, and thus we see the immense importance to society of a correct and adequate selection of those acts which it considers criminal. Thus the statement that "without increasing crime there is probably no growth in social goodness"—which looks like a paradox—and the assertion that "the nation that persists in choosing its crimes wrongly is on the high road to degeneration and decay"—which sounds almost Gilbertian—are in reality important propositions which the social reformer should not forget. The importance of Dr. Hall's insistence upon the good side of a progressive increase in crime consists largely in the fact that criminal statistics are liable to lead persons to pessimistic conclusions which are not warranted by the facts. The total number of crimes committed and punished in any country must tend to increase with each enlargement of the category of crime. Thus we get the rapidly increasing totals of crime in modern states. But, on the other hand, increasing totals of crime may be caused by increased wickedness, and it is dangerous to generalise quite so freely as Dr. Hall not infrequently does. Thus the statement that rapidly increasing totals of criminality "but evidence the rise to higher and higher planes of social morality and intelligence, and reveal the care with which upward progress is being fostered and safeguarded by the creation and enforcement of new and wise criminal laws," is only true of particular sets of criminal statistics.

The scope of this study is a wide one. The author devotes the major part of the book to English crime, from Anglo-Saxon times down to the present; but in the earlier chapters he considers not only the subject of crime amongst savages, concerning which he gives a large collection of interesting facts, but even devotes a chapter to the subject of social punishment among animals. For the statistician who is making a special study of modern criminal statistics the chapters on "Has crime increased during the nineteenth century?" "Is punishment powerless against crime?" and "The trend of crime in modern times," will be the most useful and interesting; but the social philosopher will find in the chapters on "The evolutionary function and usefulness of crime and punishment," and "An ethical theory of crime," a good deal to give him food for reflection.

Much attention has in recent years been given to the study of physiological and psychological degeneration as the basis of crime. In calling attention to the fact of crime being a social product Dr. Hall has performed a useful service.

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Die Trusts in Amerika: *H. W. Macrosty.* Einige Reformversuche im Lohnsystem: *E. Bernstein.* Die Lage der ungarischen Landarbeiter: *J. Bunzel.* Weibliche Fabrikinspektoren in der Schweiz: *F. Schuler.* Sozialpolitik und Rassenhygiene in ihrem prinzipiellen Verhältnis: *A. Ploetz.* Ein Arbeiterwohnungsviertel in einer süddeutschen Provinzstadt (Bayreuth): *E. Cahn.* Die österreichische Gewerbeinspektion im Jahre 1900: *E. Mischler.* Der Vollzug des schweizerischen Fabrikgesetzes: *E. Hofmann.*

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Jahrbuch für Gesetzgebung, Verwaltung und Volkswirtschaft. Heft 2, 1902—Zur Charakteristik der englischen Industrie, I: *W. Hasbach.* Zur Vorgeschichte des deutschen Zollvereins. Die preussisch- hessische Zollunion vom 14 Februar 1828: *C. Eckert.* Über Organpersönlichkeit. Eine begriffskritische Studie: *H. Preuss.* Behördliche Mindestlohnsatzungen in Australien: *E. Schwiedland.* Krisen und Kartelle: *R. Liefmann.* Der Unterstützungsverein für alle in der Hut- und Filzwarenindustrie beschäftigten Arbeiter und Arbeiterinnen, II: *W. Frisch.* Vorbemerkungen zu einer Theorie der Überproduktion: *A. Spiethoff.* Inhalt und Kritik des Zolltarifentwurfs vom Standpunkt der deutschen Industrie: *H. Schacht.* Bericht über die 21 Jahresversammlung des Deutschen Vereins für Armenpflege und Wohlthätigkeit: *E. Münsterberg.*

Jahrbücher für Nationalökonomie und Statistik. 1902—

February—Die Agrarzölle in der Zolltarifvorlage im Deutschen Reich: *J. Conrad.* Kritik der Grenznutzentheorie: *A. Schor.*

March—Die Frage der Regelung der Fabrikarbeit verheirateter Frauen nach den Ergebnissen der im Jahre 1899 veranstalteten Reichsenquete: *Dr. v. Brandt.* Die sozialen Verhältnisse der Juden in Preussen und Deutschland: *A. Ruppin.*

April—Entstehung und Entwickelung des Getreideterminhandels in Oesterreich: *A. Horovitz.* Zuckerausfuhrprämien und Brüsseler Vertrag: *Dr. Brukner.* Eine braunschweigische Hypothekarstatistik: *P. Kollmann.*

May—Hans von Scheel: *P. Kollmann.* "Begriff" des börsenmässigen Getreidetermingeschäftes: *A. Horovitz.* Die Selbsthilfe der Landwirtschaft in Frankreich: *H. Pudor.* Die Bank der französischen Arbeiterproduktivgenossenschaften: *F. Žižek.*

Zeitschrift für Socialwissenschaft. 1902—

Heft 3—Die Krisis in der englischen Industrie: *M. v. Brandt* (*continued in next numbers*). Ueber Vermehrungstendenz bei den Naturvölkern und ihre Gegenwirkungen, II: *R. Lasch* (*concluded in next number*). Zur griechischen Wirtschaftsgeschichte: *J. Beloch* (*conclusion*). Staatliche Gewerbeförderung in Oesterreich: *W. Exner.*

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Vierteljahrshefte zur Statistik des Deutschen Reichs. Heft 1, 1902—Zur Statistik der Preise. Beiträge zur Statistik der Fruchtmarktpreise. Die überseeische Auswanderung, 1901. Die Selbstmorde 1898 bis 1900. Die Eheschliessungen,

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Vierteljarhshefte zur Statistik des Deutschen Reichs—Contd. Geburten und Sterbefälle, 1900. Weitere Ergebnisse der Volkszählung 1900: (1.) Die Ausländer im Deutschen Reich. (2.) Die Haushaltungen im Deutschen Reich. (3.) Gemeinden und Wohnplätze von mindestens 2,000 Einwohnern. Die Bevölkerung des Deutschen Reichs im 19. Jahrhundert. Der Verkehr auf den deutschen Wasserstrassen 1872-1900. Verunglückungen deutscher Seeschiffe 1899 und 1900. Die Schiffsunfälle an der deutschen Küste 1900. Erntestatistik für das Jahr 1901.

ITALY—

La Riforma Sociale, 1902—

March—Della modernità di Giammaria Ortes: *A. Loria.* Il problema ferroviario in Italia e una sua possibile soluzione: *A. Cordano.* La situazione agricola e il possibile rimedio: *E. Masè-Dari.* Discorsi della corona: *E. Vidari.*

April—Introduzione ad un' opera sui sistemi socialisti: *V. Pareto.* Nuove osservazioni sul fenomeno dell' urbanismo: *G. Ferroglio.*

Giornale degli Economisti, 1902—

March—La crisi del Ministero e i Liberali: *La Direzione.* Le importazioni ed esportazioni temporanee: *L. Clerici* (*continued in next numbers*). Note sulla statistica internazionale dei debiti ipotecari: *L. Perozzo.* Municipalizzazione dei pubblici servigi: *G. Montemartini* (*continued in next numbers*).

April—Osservazioni sulla teoria del baratto secondo il Prof. Walras: *G. Scorza.* La questione del pane a buon mercato: *E. Giretti.*

May—Sulla teorica del numerario (a proposito della riforma monetaria della Repubblica Argentina): *E. Lorini.* Fatti ed atti del controllo economico (preliminari ad alcune linee di ragioneria pura): *C. Ghidiglia.* L'associazione cooperativa e la legislazione: *S. Perozzi.*

Rivista Italiana di Sociologia. January-February, 1902—La progressiva diversificazione del diritto pubblico e privato: *P. Bonfante.* La storia considerata come scienza: *G. Salvemini.* Le istituzioni giuridiche di una tribù dell' America settentrionale: *G. Mazzarella.*

SWITZERLAND—

Journal de Statistique Suisse. Lief 2, 1902—Zur Geschichte und Theorie des Arbeiterschutzes mit besonderer Berücksichtigung der Schweiz: *M. Büchler.* Die ersten Volkszählungen in Graubünden: *C. Jecklin.* Die Lohnverhältnisse des Personals der schweizerischen Eisenbahnen: *V. E. Scherer.* Die Waisenkinder der Gemeinde Herisau: *J. Hertz.* Die Ausländer im Deutschen Reiche nach der Volkszählung vom 1, Dezember 1900.

VII.—*Quarterly List of Additions to the Library.*

Additions to the Library during the Quarter ended 15*th June*, 1902, *arranged alphabetically under the following heads:*—(a) *Foreign Countries;* (b) *India and Colonial Possessions;* (c) *United Kingdom and its Divisions;* (d) *Authors, &c.;* (e) *Societies, &c.* (*British*); (f) *Periodicals, &c.* (*British*).

The Society has received, during the past quarter, the current numbers—either quarterly, monthly, or weekly—of the periodical official publications dealing with the following subjects:—

Consular Reports—From United States and United Kingdom.

Labour Reports, &c.—From Austria-Hungary, Belgium, France, United States, New York State, New Zealand, and United Kingdom.

Trade Returns—From Argentina, Austria-Hungary, Belgium, Bulgaria, China, Egypt, France, Germany, Greece, Italy, Mexico, Netherlands, Russia, Spain, Sweden, Switzerland, United States, India, Canada, and United Kingdom.

Vital Statistics—From Argentina, Egypt, Germany, Italy, Netherlands, Roumania, Switzerland, United States (Connecticut and Michigan only), Queensland, South Australia, and United Kingdom.

Vital Statistics of following Towns—Buenos Ayres, Brünn, Prague, Brussels, Copenhagen, Berlin, Hanover, Florence, Bucharest, Madrid, London, Manchester, Dublin, Edinburgh, and Aberdeen.

The Society has received during the past quarter the current numbers of the following unofficial Periodicals and Publications of Societies, &c., arranged under the Countries in which they are issued:—

Denmark—Nationalökonomisk Tidsskrift.

France—Annales des Sciences Politiques. Économiste Français. Journal des Économistes. Monde Économique. Polybiblion, Parties Littéraire et Technique. Réforme Sociale. Le Rentier. Revue d'Économie Politique. Revue de Statistique. Journal de la Société de Statistique de Paris.

Germany—Allgemeines Statistisches Archiv. Archiv für Soziale Gesetzgebung und Statistik. Deutsche Oekonomist. Jahrbuch für Gesetzgebung, Verwaltung, und Volkswirtschaft. Jahrbücher für Nationalökonomie und Statistik. Zeitschrift für die gesamte Staatswissenschaft. Zeitschrift für Socialwissenschaft. Mittheilungen aus der Handelskammer Frankfurt a. M.

Italy—L'Economista. Giornale degli Economisti. Rivista Italiana di Sociologia. Riforma Sociale.

Sweden—Ekonomisk Tidskrift.

Switzerland—Journal de Statistique suisse.

United States—Banker's Magazine. Bradstreet's. Commercial and Financial Chronicle, with supplements. Engineering and Mining Journal. Journal of Political Economy. Political Science Quarterly. Quarterly Journal of Economics. Yale Review. American Academy of Political and Social Science, Annals. American Economic Association, Economic Studies and Publications. American Geographical Society, Bulletin. American Statistical Association, Quarterly Publications. American Philosophical Society, Proceedings and Transactions. Columbia University, Studies in History, &c.

India—Indian Engineering. Asiatic Society of Bengal, Journal and Proceedings.

Canada—The Chronicle: Insurance and Finance.

New Zealand—Government Insurance Recorder. Trade Review and Price Current.

United Kingdom—The Accountant. Accountants' Magazine. Appointments Gazette. Athenæum. Australian Trading World. Bankers' Magazine. Bimetallist. British Refrigeration. British Trade Journal. Broomhall's Corn Trade News. Browne's Export List. Citizen. Colliery Guardian. Commercial World. Economic Journal. Economic Review. Economist. Fireman. Incorporated Accountants' Journal. Insurance Record. Investors' Monthly Manual. Investors' Review. Iron and Coal Trades' Review. Labour Co-partnership. Licensing World. Machinery Market. Nature. Navy League, Journal. Policy-Holder. Post Magazine. Public Health. Publishers' Circular. Sanitary Record. Shipping World. Statist. The Times. Tuberculosis. West Africa. Anthropological Institute, Journal. Cobden Club, Leaflets. East India Association, Journal. Howard Association, Leaflets, &c. Imperial Institute, Journal. Institute of Actuaries, Journal. Institute of Bankers, Journal. Institution of Civil Engineers, Minutes of Proceedings. Iron and Steel Institute, Journal. Lloyd's Register of British and Foreign Shipping, Statistical Tables. London Chamber of Commerce, Journal. London University Gazette. Manchester Literary and Philosophical Society, Memoirs and Proceedings. Royal Agricultural Society, Journal. Royal Asiatic Society, Journal. Royal Colonial Institute, Proceedings and Journal. Royal Geographical Society, Geographical Journal. Royal Irish Academy, Proceedings and Transactions. Royal Meteorological Society, Meteorological Record and Quarterly Journal. Royal Society, Proceedings. Royal United Service Institution, Journal. Sanitary Institute, Journal. Society of Arts, Journal. Statistical and Social Inquiry Society of Ireland, Journal. Surveyors' Institution, Professional Notes and Transactions. Trade Circulars.

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Argentine Republic—	
Anuario de la Direccion General de Estadistica, años 1899 and 1900. 4 vols., 8vo	Mr. V. de la Plaza
Comercio exterior argentino. Año 1901. No. 112. 8vo. 1902	
Boletin demografico argentino. (Current numbers)	The Ministry of the Interior
Buenos Aires (Province). Direccion General de Estadistica. Boletin mensual. Año 1. Nos. 1—17. 8vo. 1900	The Statistical Bureau
Austria-Hungary—	
Ackerbau-Ministeriums. Statistisches Jahrbuch des k.k. (Current numbers)	The Ministry of Agriculture
Arbeitsstatistisches Amt.—	
Bericht über die Thätigkeit des k.k. Amtes während 1901. 8vo.	The Austrian Labour Department
Protokoll den 10^{en} Sitzung des Arbeitsbeirathes. 1901. 8vo.	
Finanz-Ministeriums. Mittheilungen des k.k. Jahrgang 8. Heft 1. 8vo. 1902	The I. & R. Ministry of Finance
Österreichisches Wirtschaftspolitisches Archiv. (vormals "Austria"). (Current numbers.) 8vo.	The Ministry of Commerce
Bewegung der Bevölkerung im Jahre 1898. Fol.	The I. & R. Central Statistical Commission
Reichsrathswahlen. Ergebnisse der, für das Jahr 1900–1. Map. Fol.	

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Statistisches Jahrbuch der autonomen Landesverwaltung in den im Reichsrathe vertretenen Königreichen und Ländern. ii Jahrgang. 1902	The I. & R. Central Statistical Commission
Statistische Monatschrift. (Current numbers)	
Statistische Nachrichten aus dem Gesammtgebiete der Landwirtschaft. (Current numbers)	
Brünn. Thätigkeitsbericht des städt. Arbeitsvermittlungsamtes in Brünn für 1901. 39 pp., 8vo.	The Municipal Statistical Bureau
Budapest. Die finanziellen Ergebnisse der Actiengesellschaften während des letzten Vierteljahrhunderts (1874-98). Heft 2. Diagram, la. 8vo.	„
Belgium—	
Armée Belge. Statistique médicale. Année 1898. 8vo.	The Belgian Army Medical Department
Budgets des Recettes et des Dépenses pour l'Exercice 1902. Fol. 1901	Dr. J. S. Keltie
Bulletin du Service de Santé et de l'Hygiène publique. (Current numbers)	The Belgian Legation
Filatures de Lin. Étude d'hygiène professionnelle . . . Plates, 8vo. 1902	The Belgian Labour Department
Mines. Annales des. Tome vii. Livr. 2. Année 1902	
Moteurs électriques dans les Industries à domicile . . . Rapport. 292 pp., 8vo. 1902	
Bruges. Verslag over het Bestuur en den Toestand van Stadszaken, Jaar 1900. 8vo.	The Ministry of the Interior
Hasselt. Exposé de l'administration et de la situation des Affaires Communales en 1900-01. 8vo.	The Burgomaster
Académie Royale de Belgique—	
Annuaire. Année 1902. Portraits, 12mo.	The Academy
Bulletin de la Classe des lettres et des Sciences morales et politiques et de la Classe des beaux-arts, 1901, and Nos. 1—3 of 1902. 4 vols., 8vo.	
Brazil—	
Importação e Exportação . . . de Janeiro a Setembro de 1901. Fol.	The Statistical Bureau
China—	
Customs Gazette. No. 132. Oct.—Dec., 1901. 4to.	Sir Robert Hart, Bart., G.C.M.G.
List of Lighthouses, &c., on the Coast and Rivers of China for 1902. 4to.	
Medical Reports for half-year ended 30th Sept., 1900. 60th Issue. Plates, &c., 4to.	
Returns of Trade and Trade Reports for 1901. Part 1. 4to.	
Denmark—	
Comptes communaux et de ports, 1885-99. 4to. 1902	The State Statistical Bureau
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Commerce extérieur de l'Égypte pendant 1901. La. 8vo.	The Director-General of Customs

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Egyptian Statistical Tableau for 1901. Compiled and published annually by R. J. Moss and Co., Alexandria. 35th Issue	Messrs. R. J. Moss and Co.
France—	
Agriculture. Bulletin du Ministère de l'. (Current numbers)	The Ministry of Agriculture
Budget général de l'Exercice 1901. 15 vols., 4to.	Dr. J. S. Keltie
Chemins de fer français. Statistique des, au 31 Déc., 1900. Documents principaux. Maps, 4to. 1901 Chemins de fer du Monde. Situation au 31 Déc., 1900. 8 pp., 4to.	The Ministry of Public Works
Finances, Ministère des. Bulletin de Statistique et de Législation comparée. (Current monthly numbers)	The Ministry of Finance
Travail. Seconde enquête sur le placement des employés, des ouvriers, et des domestiques. 187 pp., 8vo. 1901.	The French Labour Department
Colonies. Statistiques Coloniales pour l'année 1899. Commerce. 8vo.	Dr. J. S. Keltie
Paris. Annuaire Statistique de la Ville de Paris, 20ᵉ année, 1899. Plans, la. 8vo. 1901	The Municipal Statistical Bureau
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Amtliche Nachrichten des Reichs-Versicherungsamts, No. 4, April, 1902. (Contents): Geschäftsbericht des Reichs-Versicherungsamts für 1901. 4to.	The Imperial Insurance Bureau
Seeschiffahrt im Jahre 1900. Abth. 2. 4to. Vierteljahrshefte zur Statistik des Deutschen Reichs. Jahrgang 1902. Heft 1. 4to.	The Imperial Statistical Bureau
Prussia—	
Zeitschrift des K. Preussischen Statistischen Bureaus. (Current numbers) Geburten, Eheschliessungen und Sterbefälle während 1900. (169) Landesuniversitäten. Statistik der preussischen, . . . für 1899-1900. (167) Sterblichkeit nach Todesursachen und Altersklassen der Gestorbenen . . . Jahr 1900. (171)	The Royal Prussian Statistical Bureau
Saxony. Zeitschrift des K. Sächsischen Statistischen Bureaus. (Current numbers)	The Statistical Bureau of Saxony
Württemburg. Württembergische Jahrbücher für Statistik und Landeskunde. Jahrgang 1900. Hefte 1—3, in 2 vols. Maps, la. 8vo. 1901	Dr. J. S. Keltie
Berlin. Tabellen über die Bewegung der Bevölkerung der Stadt Berlin im Jahre 1900. Fol.	The Municipal Statistical Bureau
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Commission Financière Internationale. Importation de la Douane du Pirée pendant 1901. 2ᵉ année. Fol. Athènes, 1902	The Commission
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Annali di Statistica. Atti della Commissione per la Statistica giudiziaria e notarile. Sessione del Marzo, 1901. 8vo.	The Director-General of Statistics
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Spaar-en Leenbanken in Nederland in 1899. Statistiek der. 4to.	
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Sabbatshvila . . . Underdånigt Betänkande och Förslag, 1902 af Komiten for verkstallande af utredning i fråga om utsträckt, 8vo. 1902	The University of Upsala
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Census Bulletins, 1900. Nos. 139—170, Agriculture of different States. Nos. 136—163, Manufactures of different States. 156, Domestic Animals in the United States. Manufactures. 138, Oleomargarine. 161, Silk Manufactures. 166, Shipbuilding. 168, Flax, Hemp, and Jute Products. 171, Rubber Boots and Shoes. 172, Buttons. 173, Watches and Watch Cases. 174, Manufactured Ice. 149, Methods and Results. A Discussion of Area and Population	The Census Office
Comptroller of Currency. Annual Report of, 2nd Dec., 1901. Vol. 1.	The Comptroller of the Currency
Education. Report of Commissioner of, for the year 1899-1900. Vol. 2. 8vo. 1901	The Commissioner of Education
Foreign Commerce and Navigation of United States for year ending 30th June, 1901. Vol. 1. 4to.	The Treasury Department
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Gold, Silver, and Notes, &c., in Circulation. Monthly Statements. (Current numbers.) Sheets	

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Mineral Resources of the United States. Calendar year 1900. 8vo.	The Director, U.S. Geological Survey
Post Office Department. Annual Reports for year ended 30th June, 1899. Plates, &c., 8vo.	Dr. J. S. Keltie.
Review of the World's Commerce. Introductory to commercial relations of the United States with Foreign Countries during the year 1901. 8vo.	The Bureau of Foreign Commerce, Department of State
Statistical Abstract of the United States for 1901. 24th Number. 8vo. 1902	The Treasury Department
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Bureau of Labor Statistics. 17th Annual Report for 1900-01. 8vo.	The Bureau of Labor
State Board of Health. 24th Annual Report for 1901, with Registration Report for 1900. 8vo.	The Board of Health
Maine. Bureau of Industrial and Labor Statistics. 15th Annual Report for 1901. Plates, 8vo.	The Bureau of Labor
Maryland. Bureau of Industrial Statistics. 10th Annual Report for 1901. 8vo.	The Bureau
Massachusetts. Labor and Industrial Chronology for 1901. 8vo. 1902	The Bureau of Labor Statistics
Michigan. Births, Marriages, and Deaths. 33rd Annual Report on, for 1899. Also Registrar's Calendar and Manual of Instructions prepared for the use of Registrars of Deaths in the State of Michigan. 24 pp., sm. 4to. Lansing, 1902	The Division of Vital Statistics, Department of State
Minnesota. State Board of Corrections and Charities. Bulletin of Charities and Correction. (Current numbers)	The Board
New York (*State*). Library. Bulletins 69, Comparative Summary and Index of Legislation in 1901. 72, Review of Legislation, 1901. 2 vols., 8vo. 1901-02	The State Library
Boston—	
Annual Report of Executive Department for 1900. 2 vols., plates, 8vo.	The Municipal Statistical Bureau
Monthly Bulletin of the Statistics Department. (Current numbers)	
Fourth Annual Report of the Statistics Department for 1900. 8vo., 19 pp.	
Receipts and Expenditures of Ordinary Revenue, 1896-1900. 149 pp., 4to.	
Chicago. John Crerar Library. 7th Annual Report for 1901. 8vo.	The Library
New York (*City*)—	
Public Library. Bulletin. (Current numbers)	„
Weekly Reports of the Department of Health for 1901. 8vo.	Dr. F. J. Allan
Philadelphia Museum—	
Cotton. Manufactures of. World's Export Trade. xi + 35 pp., 8vo, 1900	The Museum

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Philadelphia Museum—*Contd.*	
Herpetology of New Granada and Argentina. Contributions to. 22 pp., plates, 8vo. 1899	The Museum
Raw Products which enter into Commerce of World. Suggestions on some. 52 pp., 8vo. 1901	
Waterworks of Europe. 2, The European Continent. 3, London and Liverpool. 8vo	
Cuba. Reports on Commercial and Industrial Condition of the Island, by Robert P. Porter, Special Commissioner . . . 7 parts, 8vo. 1898-99	The Author
Porto Rico—	
Report on the Currency Question of Porto Rico, by Robert P. Porter, Special Commissioner. 19 pp., 8vo. 1899	"
Report and Recommendations on Customs Tariff of Porto Rico, by Robert P. Porter, Special Commissioner. 69 pp., 8vo. 1899	
Sound Currency. A Quarterly Publication devoted to Currency Questions. Vol. ix, No. 1. 1902	Purchased
American Economic Association. Publications. 3rd Series. Vol. iii, No. 1. Papers and Proceedings of the 14th Annual Meeting. Dec., 1901. 8vo.	The Association
Johns Hopkins University Studies—	
Series 19, No. 10, Life of Commissary James Blair, founder of William and Mary College: *D. E. Motley*. Nos. 11 and 12, Governor Thomas H. Hicks, of Maryland, and the Civil War: *G. L. P. Radcliffe*, 1901	The University
Series 20, No. 1, Western Maryland in the Revolution: *B. C. Steiner*. 8vo. 1902	
Extra volumes, xxiii: Herbert B. Adams: Tributes of Friends. With a Bibliography of the Department of History, Politics, and Economics of the Johns Hopkins University, 1876-1901. xxiv, History of Slavery in Virginia. With Bibliography: *James C. Ballagh*. 1902	
Smithsonian Institution. Smithsonian Contributions to Knowledge. Hodgkin's Fund. Experiments with Ionized Air. La. 4to. 1901	The Institution
Uruguay—	
Anuario Estadistico de la Republica. Años 1899-1900. 2 vols., diagrams. La. 8vo.	The Statistical Bureau
Movimiento del estado civil y mortalidad de la Republica. Año 1900. 8vo. 1901	
Oficina de Credito publico. Deuda publica de la Republica. 1899. 9 pp., obl. 4to. 1900	Dr. J. S. Keltie
International—	
Bulletin International des Douanes. (Current numbers.) 8vo.	The Board of Trade
International Engineering Congress, Glasgow, 1901. Proceedings of Section I, Railawys; and of Section II, Waterways and Maritime Works. 2 vols., plates, &c. 8vo. 1902	The Secretary of the Congress

Donations—Contd.

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(b) **India and Colonial Possessions.**	
India, British—	
Moral and Material Progress and Condition during 1900-01. Statement exhibiting, 37th No. (180) 1902	The India Office
Statistics of Cotton Spinning and Weaving in the Indian Mills. (Current numbers)	The Statistical Bureau
Bengal. Report on the Administration of Bengal for 1900-01. Maps, fol. 1902	The Lieut.-Governor of Bengal
East Indian Railway Company. Diagrams of Traffic audited, second half-year of 1901. Fol.	The Company
Bombay Branch of Royal Asiatic Society. Journal. Vol. xxi, No. 57. 8vo. 1901	The Society
Canada, Dominion of—	
Census of Canada, 1901. Bulletins. 4, Rural and Urban Population of British Columbia, the Territories and all Canada. 5, Religions of the People. 6, Sexes and Conjugal Condition. 7, Population by Origins and Nationalities. 8, Immigration and Birthplace	The Special Census Commissioner
Agriculture. Report of Minister of, for 1900-01	Sir John G. Bourinot, K.C.M.G.
Alleged combination of Paper Manufacturers and Dealers. Report in regard to, 1902	
Canadian Archives. Report on, for 1901	
Civil Service Examiners. Report of, for 1901	
Experimental Farms. Reports for 1901. Plates	
Geographic Board of Canada. Third Annual Report, 1901	
Geological Survey Department. Report for 1901	
Insurance Companies. Abstract of Statements, 1901	
List of Shareholders in Chartered Banks as on 31st December, 1901. (Another copy from Mr. J. M. Courtney, C.M.G.)	
Maps to accompany Report on Public Works, 1900-01	
Marine and Fisheries. Report of Department of, for 1901. Fisheries	
Militia and Defence. Report of Department of, for 1901	
North-West Mounted Police. Report of, for 1901	
Public Printing and Stationery. Report of Department for 1900-01	
Railway Commissioners, Railway Rate Grievances, and regulative Legislation. Reports on, 1902	
Secretary of State. Report of, for 1901	
Ontario. Agricultural College. Bulletin, 120. Butter, Milk, and Cheese. 32 pp., 8vo. 1902	The College
Cape of Good Hope—	
Civil Service List and Calendar, 1902. Map, 8vo. 1902	The Colonial Secretary
Ceylon—	
Administration Reports for 1900. Diagrams, &c., fol. 1901	The Government of Ceylon
Jamaica—	
Annual Report of Registrar-General for year ended 31st March, 1901. Fol. 1902	The Registrar-General

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Natal—	
Railways. Report of General Manager of, for 1900. Fol. Maps	—
New South Wales—	
Agricultural and Live Stock Statistics of New South Wales for 1901-02. Preliminary Tables. 8vo. 1902	The Government Statistician
Annual Report, showing deaths from all causes during 1901. 3 pp. Fol.	
Annual Return of Marriages, Births, and Deaths in 1901. 5 pp. Fol.	
Census of 31st March, 1901. Results of, Part 1, Ages of the People. 4to.	
Census of 1901. Bulletins. Nos. 5, Ages of People. 6, Education of the People in Counties. 7, Education of the People in Municipalities. 8, Religions of the People. 9, Birthplaces of the People. 10, Conjugal condition of the People in Counties. 11, Conjugal condition of the People in Municipalities	
Mines. Department of. Annual Report for 1900. Plans, &c. Fol.	The Agent-General for New South Wales
Moore's Australian Almanac and Country Directory for 1902. 51st year of publication. 8vo.	
Returns under the several Acts of Parliament administered by the Registrar-General for 1901. (Deeds, Trade Marks, Land Titles, &c.) 9 pp. Fol.	The Registrar-General
Statistical Register for 1900 and previous years. 8vo.	The Government Statistician
Statistical Register for 1901 and previous years. Part 1, Religion. 8vo.	
Year-book of New South Wales. Map. 8vo. 1902	Messrs. Street & Co.
Sydney. Registrar-General's Report on Vital Statistics of Sydney and Suburbs for 1901. Fol.	The Registrar-General
Commonwealth Celebrations. 1901. Sydney Mail. Commonwealth Number. Jan. 1, 1901. Illustrations. Also Souvenir of the Inauguration of the Australian Commonwealth. 3rd Edition, 1901. and Reduced *fac similes* of Sydney Morning Herald and Sydney Daily Telegraph	The Agent-General of New South Wales
The Review: an Australasian Journal of Banking, Insurance, and Finance. Vol. iii, No. 3. March	Mr. S. W. D'Arcy Irvine
New Zealand—	
New Zealand Official Year-Book, 1901. (10th year of issue.) 8vo. 2 copies	The Registrar-General of New Zealand
Statistics of the Colony for 1900. 3 copies. Fol.	
The Accident Recorder, published by the Government Insurance Department. (Current numbers)	The Department
Wellington. Harbour Board. Accounts, &c., for 1901. Fol.	The Board
Rhodesia—	
Southern Rhodesia. Information for intending Settlers. 60 pp., plates, 8vo. 1902	The British South Africa Co.
The Rubber Industry in the British South Africa Company's Territories. 28 pp., sm. 4to. 1900	Dr. J. S. Keltie

Donations—Contd.

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(b) **India and Colonial Possessions**—*Contd.*	
South Australia—	
Agricultural Statistics. Season 1901-02. (Preliminary Tables.) 6 pp., 4to.	The Under-Secretary and Government Statist
Census of South Australia, 1901. Ages of the People. 8 pp., fol.	
Public Library, Museum, and Art Gallery. Report for 1900-01. Fol.	The General Director and Secretary
Straits Settlements—	
The Perak Government Gazette. (Current weekly numbers)	The Government Secretary
Tasmania—	
Handbook of Tasmania, with list of Reference works on Agricultural, Pastoral, &c. . . ., Resources of the Colony. 32 pp., map, 8vo. Launceston, 1899	The Agent-General for Tasmania
Statistics of the Colony for 1900. Fol. 1901	The Government Statistician
Victoria—	
Friendly Societies. 25th Annual Report on. Report of Actuary for 1900. Fol.	The Actuary, Melbourne
Victorian Year-Book, 1895-98. 22nd Issue. 1901. 8vo.	The Government Statist of Victoria
Western Australia—	
Monthly Statistical Abstract. (Current numbers.) Fol.	The Agent-General for W. Australia
Returns as to gold production and gold received at the Mint at various dates. Sheets	
Statistical Register for 1900. Parts 3, Accumulation. 5, Land Settlement, Agriculture, and Live Stock. 6, Industrial Establishments	The Registrar-General, W. Australia
Supplements to Government Gazette, containing Monthly Mining Statistics. (Current numbers)	
Australasia—	
Review of Reviews for Australasia. February, 1901. (Containing a description of Tasmania)	The Agent-General for Tasmania
(c) **United Kingdom and its several Divisions.**	
United Kingdom—	
Board of Trade Journal. (Current numbers)	The Board of Trade
Foreign Trade and Commerce of certain Foreign Countries and British Possessions. (Current monthly numbers)	
Factories and Workshops. Annual Report of the Chief Inspector for 1901. Part 1, Reports. [Cd-1112.] Fol. 1902. Plates	The Home Office
Friendly Societies, Workmen's Compensation Schemes, &c. Reports of Chief Registrar for 1900. Part A. Appendix (K). List of Friendly Societies, with Summaries of Returns, Valuations, &c. (35—i). Part B. Appendix (L). Industrial and Provident Societies (35—ii). Part C. (Appendix (M). Trade Unions (35—iii). Part D (1). Valuations of Friendly Societies with Branches (35—iv). 1901	The Chief Registrar of Friendly Societies

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United Kingdom—*Contd.*	
Mines and Quarries. General Report and Statistics for 1901. Part 1, District Statistics. [Cd-1110]....	The Home Office
Railway Accidents. Returns of Accidents and Casualties during 1901. [Cd-1101.] 1902	The Board of Trade
Sea Fisheries of United Kingdom, 1901. (161.) 1902	
Trade of United Kingdom with Foreign Countries and British Possessions. Annual Statement for 1901. Vol. 1. [Cd-1105.] 1902	
Accidents on Railways during 1900. General Report on. [Cd-776.] 1901	Purchased
Army and Militia. Report of Inspector-General of Recruiting for 1900. [Cd-519.] 1901	
Betting. Report of Select Committee on. (370.) 1901	
British Museum. Return. (85.) 1900. 8vo.	
Charitable Agencies for Relief of Widows and Orphans of Soldiers and Sailors. Report of Committee on. (180.) 1901	
Coal Tables. 3rd Issue. (No. 1.) 1897. 4th Issue. (126.) 1898	
Early Closing of Shops. Report of Select Committee. (141.) 1901	
Employment of School Children Committee. Minutes of Evidence, &c. [Cd-895.] 1902..........	
Estimates for Revenue Departments for year 1902-03. [53-viii.] 1902	
Imperial Yeomanry. Report of Deputy Adjutant-General on its Home Organization, Inspection, &c. [Cd-803.] 1901	
Industrial Property and Merchandise Marks. Papers, re-protection of. [Cd-603.] 1901	
Legislative Assemblies [abroad]. Reports . . . on Methods of taking Divisions in, and the number and Duration of the Sittings. [Cd-907.] 1902	
Legislative Assemblies [abroad]. Reports . . . respecting Rules in Force for Preserving Order in. [Cd-909.] 1902..........	
Locomotives. Correspondence respecting Comparative Merits of British, Belgian, and American Locomotives in Egypt. [Cd-1010.] 1902	
London Underground Railways. Report of Select Committee on. (279.) 1901	
Merchant Shipping. Tables showing Progress of, in 1892-95. (222.) 1893. (135.) 1894. (306.) 1895. (205.) 1896	
Meteorological Council. Report of, for 1900-01. [Cd-842.] 1901. 8vo..........	
Navy Rations, &c. Report of Committee on. [Cd-782.] 1901..........	
Parliamentary Constituencies (Electors, &c.). (United Kingdom.) (70). 1902	
Parliamentary Election, 1900. Expenses of Candidates. (352.) 1902	
Pilotage. Return. (265.) 1900	
Sea Fisheries. (Restrictive Legislation in Foreign Countries.) (271.) 1901	

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United Kingdom—*Contd.*	
South Africa. Report of Lands Settlement Commission. [Cd-626] and [Cd-627.] 1901. 2 parts	Purchased
South Africa. Transvaal Concessions Commission. Report of. [Cd-623] and [Cd-624.] 2 parts. 1901	
South Africa. Army (Remounts). Reports, Statistical Tables, and Telegrams received. June, 1899, to 22nd January, 1902. [Cd-963.] 1902	
South Africa. Further Papers relating to Working of Refugee Camps in South Africa. [Cd-853.] 1901. [Cd-934] and [Cd-936.] 1902	
Tramways (Street and Road). (238.) 1889. (282.) 1890. (7.) Session 2. 1892	
War Office Contracts. Report of Select Committee. (313.) 1900	
Great Britain—	
Agriculture. Journal of the Board of. Vol. viii, No. 4. 1902	The Board of Agriculture
Agricultural Returns, 1901. Produce of Crops. Tables showing estimated total produce and average yield per acre of principal crops . . . 27 pp., 8vo.	
Board of Agriculture. Leaflets. Nos. 71, The Colorado Beetle; 72, Purchase of Artificial Manures; 73, Cultivation of Maize for Fodder	
England and Wales—	
Births, Deaths, and Marriages. 63rd Annual Report of Registrar-General. (1900.) [Cd-761.] 8vo. 1902	The Registrar-General
British Museum. Catalogue of Printed Books. Supplement. (Current numbers.) 4to.	The Trustees
Judicial Statistics, England and Wales, 1900. Part 1, Criminal Statistics. [Cd-953.] Part 2, Civil Judicial Statistics. [Cd-1115.] 2 vols. Diagrams, 4to. 1902	The Home Office
Kew Bulletin of Miscellaneous Information	Purchased
Local Taxation Returns. Year 1899-1900. Parts 2, 3, 6, 7. Fol. 1902	
Police (Counties and Boroughs). Reports for year 1899-1900. (200.) 1901	
London County Council. Technical Education Gazette. (Current numbers)	The London County Council
London University Gazette. (Current numbers)	The University
London, City. The City of London, the Prince and Princess of Wales and the Colonies. 68 pp., sm. 8vo. 1902	The Corporation of the City of London
Bristol. Annual Report of Medical Officers of Health, and of Chief Port Inspector of Nuisances for 1901. 8vo. 1902	The Medical Officer of Health
Derby. Annual Report of Medical Officer of Health for 1901. 8vo.	"
Haydock. Supplement to the Annual Report on the Health of Haydock for 1901. Life Tables. 12 pp., fol. 1902	Dr. T. E. Hayward
Norwich. Annual Report on the Health of the City for 1901. Diagrams, 8vo	The Medical Officer of Health

Donations—Contd.

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(c) **United Kingdom and its Divisions**—*Contd.*	
England and Wales—*Contd.*	
Preston. Annual Report of Medical Officer of Health for 1901 Maps, 4to. 1902	The Medical Officer of Health
Stafford. 28th Annual Report of the Health of Stafford for 1901. 18 pp., 8vo. 1902	"
Wigan. 6th Annual Report on the Health of Wigan for 1901. Diagrams, &c., 8vo. 1902	"
Ireland—	
Department of Agriculture and Technical Instruction. Journal. Vol. ii, No. 3, March, 1902	The Department
Banking, Railway, and Canal Statistics, Ireland, Dec., 1901. [Cd-1032.] 8vo. 1902 Local Taxation Returns for 1899-1900. [Cd-879.] 1901 Royal Commission on Local Taxation. Final Report. Ireland. [Cd-1068.] 1902	Purchased
Scotland—	
Code of Regulations for continuation classes . . . 1902. [Cd-1104.] 8vo. 1902 Report of Committee of Council on Education, 1901-02. [Cd-1108.] 8vo. 1902	The Scotch Education Office
Local Authorities in Scotland. Technical Education Grants, 1899-1900. (140) 1901 Royal Commission on Local Taxation. Final Report of Commissioners, Scotland. [Cd-1067.] 1902	Purchased
Supplement to monthly and quarterly Registration Returns for 1901; also Vaccination Returns relative to children born during 1900. 8vo. 1902	The Registrar-General of Scotland
Edinburgh. Accounts of the City published in 1901. Fol.	The City Chamberlain
Aberdeen. Report on Sanitary condition of Aberdeen for 1901. 8vo. 1902.	The Chief Sanitary Inspector
Glasgow—	
Local Industries of Glasgow and the West of Scotland. 288 pp., diagrams, 8vo. 1901	The Secretary, Engineering Congress
Smallpox, 1900-02. Report by A. K. Chalmers, M.D., 58 pp., maps, fol. Glasgow, 1902	The Medical Officer of Health
(d) **Authors, &c.**	
Abraham (*May E.*) and *Davies* (*Arthur L.*). The Law relating to Factories and Workshops (including Laundries, Railways, Docks): Part i, Practical Guide to the Law and its administration, by May E. Abraham. Part ii, The Acts, with Notes . . . by Arthur L. Davies. 4th edit. xiv + 381 pp. 8vo. 1902	Purchased
Adams (*Brook*) and *Ford* (*Worthington C.*). The Foreign Trade of the United States, by Brook Adams. Commercial Policy of Europe, by Worthington C. Ford. 17 + 40 pp. 8vo. Washington, 1901	Mr. W. C. Ford
Allen (*H. B.*)— Statistics concerning Cancer in Australasia. 43 pp., 8vo. Hobart, 1902 Cancer: An Introductory Address. 16 pp., 8vo. Hobart, 1902	The Author

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Avebury (*Lord*). A Short History of Coins and Currency, in two parts. x + 138 pp. Illustrations, 12mo. 1902	The Author
Barrett (*Rosa M.*). Juvenile Offenders. (In Japanese, translated by Mr. Taro Tanaka.) 8vo. Tokyo, 1902	The Translator
Broomhall (*Geo. J. S.*). Broomhall's Corn Trade Year Book. Review of the World's Grain Trade, 1901-02. 8vo. 1902	The Author
Cauderlier (*G.*).—	
Les lois de la population en France, avec une préface par E. Levasseur. xix + 184 pp., 8vo. Paris, 1902	Messrs. Guillaumin and Co.
Les lois de la population en France. Atlas de demographie statique et dynamique. Diagram, maps, &c., obl. 4to. Paris, 1902	
Cooper (*Joseph*). Cooper's Tabular Guides to Ordinary Life Assurance. Folded sheets. 1902	The Compiler
Digby (*William*). A Study for the Coronation Month. The Condition of the People of India. Official Statistics indicate greater impoverishment than does non-official criticism . . . 16 pp., fol. 1902	The Author
Edwardes (*Edward J.*). A Concise History of Small-pox and Vaccination in Europe. viii + 142 pp., diagrams, 8vo. 1902	„
Einaudi (*Luigi*). Studi sugli Effetti delle Imposte. Contributo allo studio dei problemi tributari municipali. l + 289 pp. 8vo. Torino, 1902	„
Frederiksen (*N. C.*). Finland: its public and private economy. xi + 306 pp. Map. 8vo. 1902	Purchased
Giglioli (*Italo*). Lo stato italiano e la cultura del Sughero specialmente nella Sardegna . . . 60 pp., 8vo. Portici, 1902	The Author
Hall (*Arthur C.*). Crime in its relations to Social Progress. Studies in History, Columbia University. Vol. 15. 8vo. 1902	Messrs. P. S. King and Son
Howell (*George*). Labour legislation, labour movements, and labour leaders. xxiii + 499 pp., 8vo. Portrait. 1902	Purchased
Jagger (*J. W.*). Annual Address by the President of the Chamber of Commerce [of Cape Town] to the Members, 1902. 18 pp., 8vo. 1902	The Author
Levasseur (*E.*). Histoire des classes ouvrières et de l'industrie en France avant 1789. 2ᵉ edit. 2 vols., la. 8vo. Paris, 1900-01	Purchased
Little (*Edward S.*). The Chinese Revenue and the new Treaty. A Protest against an increased Tariff, from a merchant's point of view. 14 pp., 8vo. 1902	Dr. B. W. Ginsburg
Molesworth (*Sir Guilford L.*). Our Empire under Protection and . . . Free Trade. 125 pp. Diagrams, 8vo. 1902	The Author
Muirhead (*Claud*), M.D. The Causes of Death among the Assured in the Scottish Widows' Fund and Life Assurance Society from 1874 to 1894 inclusive. Reported by the Medical Officer of the Society. viii + 93 pp., 8vo. Edinburgh, 1902	„

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Nerincx (*Alfred*)— Le suffrage universel en Belgique, son organisation et ses resultats. 32 pp., 8vo. Paris, 1899 Le suffrage universel, le vote plural et la representation proportionelle. 28 pp., 8vo. Bruxelles, 1900	Dr. J. S. Keltie
Neymarck (*Alfred*). Ce qu'on appelle la Féodalité financière, le classement et la répartition des actions et obligations de chemins de fer de 1860 à 1900. 28 pp., 8vo. Paris, 1902	The Author
Paish (*George*). The British Railway Position, with Introduction by George S. Gibb. xiv + 322 pp., 8vo. 1902	„
Paulin (*David*)— Life Office Investments: retrospect and outlook. 29 pp., diagram, 8vo. Edinburgh, 1895 Old Age Pensions and Pauperism. A present-day problem. 32 pp., 8vo. Edinburgh, 1896 1801-1901: a Contrast. 28 pp., 8vo. 1902	„
Rozenraad (*C.*). Table comparing Gold and Silver Stock of principal Banks of Issue, their Bank rate, &c., at end of March, 1901 and 1902. Sheet	„
Smith (*Charles W.*). The South African War and the "Bear" operator. A Financial Revolution. viii + 127 pp., 8vo. 1902	„
Smart (*William*)— The Housing Problem and the Municipality. (University of Glasgow Free Lectures.) 28 pp., 8vo. Glasgow, 1902 The Greatness of Adam Smith . . . 15 pp., 8vo. Glasgow, 1901	„
Sombart (*Werner*). Der Moderne Kapitalismus. Band i, Die Genesis des Kapitalismus. Band ii, Die Theorie der Kapitalistischen Entwicklung. 2 vols., 8vo. Leipzig, 1902	Purchased
Social Evil, The. With special reference to conditions existing in the City of New York. A Report prepared under the direction of the Committee of Fifteen. xiii + 188 pp., 8vo. New York, 1902	—
Thackeray (*Rev. G. W.*). The Land and the Community. 3rd edit. 223 pp., 8vo. [1895]	The Author
Watel (*Maurice*). Le Thé à Ceylan, le riz au Tonkin. 20 pp., 8vo. Paris, 1899	Dr. J. S. Keltie
Welton (*Thomas A.*). On the Distribution, Growth, and Decay of English Towns in 1801, and since that date. 22 pp., 8vo. 1902	The Author
Westergaard (*Harald*). Die Lehre von der Mortalität und Morbilität. Anthropologisch-Statistische Untersuchungen. 2^{e} . . . Auflage. 703 pp., la. 8vo. Jena, 1901	Purchased
Willcox (*Walter F.*). Essays in American Statistics. (Pamphlets, bound in one volume.) 8vo. 1894-99	Dr. J. S. Keltie

Vol. LXV.] [Part III.

JOURNAL

OF THE ROYAL STATISTICAL SOCIETY.

SEPTEMBER, 1902.

REPORT OF THE COUNCIL

For the Financial Year *ended* 31*st December*, 1901, *and for the* Sessional Year *ending* 17*th June*, 1902, *presented at the* Sixty-Eighth Annual General Meeting *of the* Royal Statistical Society, *held at the Society's Rooms*, 9, *Adelphi Terrace*, *Strand*, *London*, *on the* 17*th of June*, 1902.

The Council have the honour to submit their Sixty-eighth Annual Report.

The roll of Fellows on the 31st December last as compared with the average of the previous ten years was as follows:—

Particulars.	1901.	Average of the previous Ten Years.
Number of Fellows on 31st December	926	934
Life Members included in the above	177	178
Number lost by death, withdrawal, or default	49	58
New Fellows elected	52	44

Since the 1st January last, 30 new Fellows have been elected, and the Society has lost 31 by death, resignation, or default, so that the number at present on the list is 925.

The Society has to deplore the deaths of the undermentioned Fellows since June last year:—

Deaths of Fellows since June, 1901.

		Date of Election.
*	Baynes, William Wilberforce, F.I.A.	1871
c	Bowen, Horace George	1876
d	Garland, Nicholas Surrey	1889
c d p	Jourdan, Francis	1858
	Kimberley, The Right Hon. Earl of, M.A., P.C.	1852

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c Indicates those who had served on the Council.
d Indicates those who had been Donors to the Library.
p Indicates those who had contributed Papers.
* Indicates Life Members.

Deaths of Fellows since June, 1901—*Contd.*

		Date of Election—*Contd.*
	Lucas, Sir Thomas, Bart., J.P.	1878
	Macpherson, Inspector-General Hugh M., F.R.C.S.	1875
	Pollard, James, J.P.	1888
	Pulley, Sir Joseph, Bart.	1886
c	Rathbone, William	1878
d	Rothwell, Richard P.	1893
d	Smee, Alfred H., M.R.C.S.	1869
	Stephens, William Davies, J.P.	1880
	Wenley, James Adams	1879

The financial condition of the Society is exhibited in the table on p. 413, which gives the details for the twenty-five years 1877-1901.

The papers read and the Fellows elected at each of the Ordinary Meetings have been as follows:—

SESSION 1901-02.

First Ordinary Meeting, Tuesday, 19*th November,* 1901, *at the Rooms of the Society of Arts.*

The Right Hon. Lord AVEBURY, P.C., F.R S., D.C.L., LL.D., President, in the Chair.

The following were elected Fellows:—

David Beech.
Cursandas B. Dalal.
Edgar Josiah Harper.
Ernest Henry Godfrey.
Alleyne Ireland.
N. Venkataswami Iyya.
Herbert Lakin-Smith.
Hugh Owen Meredith.
Lachlan Taylor.
Robert John Thompson.
Nathan Ernst Weill.
Sydney Frank Weston.

Major P. G. Craigie, Honorary Foreign Secretary, read a Report on the Proceedings of the Meetings of the International Statistical Institute, held at Buda Pesth in September—October, 1901.

The President delivered his Inaugural Address, entitled "Local "and Imperial Burdens."

A cordial vote of thanks to the President for his Address was moved by Mr. E. W. Brabrook, C.B., seconded by Sir John Glover, and carried unanimously.

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c Indicates those who had served on the Council.
d Indicates those who had been Donors to the Library.

Second Ordinary Meeting, Tuesday, 17th December, 1901.

C. S. LOCH, Esq., B.A., Vice-President, in the Chair.

The following were elected Fellows:—

Henry Cubitt Gooch.	John Innes Rogers.
Charles Rose Witcher Offen.	Robert John Smith.

George Thomson Wilson.

Mr. Reginald H. Hooker, M.A., read a Paper on "The Suspension of the Berlin Produce Exchange and its Effect on Corn "Prices."

In the discussion which followed, the undermentioned took part:—Sir Robert Giffen, Sir John Glover, Sir W. Thistleton Dyer, Mr. J. C. Pillman, Dr. Benedict W. Ginsburg, Mr. Sydney Young, Mr. R. H. Rew, Mr. G. Udny Yule, Major P. G. Craigie, Mr. T. A. Welton, Mr. R. W. Dunham, Mr. C. S. Loch, and Mr. R. H. Hooker in reply.

Third Ordinary Meeting, Tuesday, 21st January, 1902.

The Right Hon. Lord AVEBURY, P.C., F.R.S., President, in the Chair.

The following were elected Fellows:—

James Henry Burgess.	Sir Guilford L. Molesworth.
Francis John Hemming Hart.	Raymond A. Puckle.
John Hutcheson Macdonald.	John Thomas Rees.

Sir John Glover read a Paper on "Tonnage Statistics for the "Decade 1891-1900."

In the discussion which followed, the undermentioned took part:—The President (Lord Avebury), Sir Francis S. Powell, Mr. T. Angier, Mr. Evelyn Cecil, Mr. E. R. P. Moon, Mr. R. H. Hooker, and Sir John Glover in reply.

Fourth Ordinary Meeting, Tuesday, 18th February, 1902.

E. W. BRABROOK, Esq., C.B., Vice-President, in the Chair.

The following were elected Fellows:—

Theodore Vivian Samuel Angier.	Henry Eardley Stephen Fremantle.
Alfred Vincent Foy.	Walford Davis Green.

Alfred Thomas Plant.

A Paper, entitled "A Statistical Review of the Income and "Wealth of British India," by Mr. Fred. J. Atkinson, was read, in the author's absence, by Dr. Benedict W. Ginsburg (Secretary).

In the discussion which followed, the undermentioned took part:—Mr. William Digby, Mr. J. D. Rees, Mr. F. H. B. Skrine, Sir W. Wedderburn, Mr. H. D. Pearsall, and, summing up, Mr. E. W. Brabrook (Chairman).

Fifth Ordinary Meeting, Tuesday, 18th March, 1902, at the Rooms of the Society of Arts.

The Right Hon. Lord AVEBURY, P.C., F.R.S., President,
in the Chair.

Lord AVEBURY having left the Chair, his place was taken by Sir A. E. BATEMAN, Hon. Vice-President.

The following were elected Fellows:—

William Digby.
Frederick Litchfield.
Frederick Charles Norman.
Edward Thomas Williams.

Sir Robert Giffen, K.C.B., F.R.S., LL.D., read a Paper entitled "A Financial Retrospect, 1861-1901."

In the discussion which followed, the undermentioned took part:—Sir Alfred E. Bateman, Mr. G. Shaw Lefevre, Sir Guilford L. Molesworth, Sir Francis S. Powell, Mr. H. Birchenough, Major P. G. Craigie, Mr. C. Erlund, and Sir Robert Giffen in reply.

Sixth Ordinary Meeting, Tuesday, 15th April, 1902.

The Right Hon. Lord AVEBURY, P.C., F.R.S., President,
in the Chair.

The following were elected Fellows:—

William Coxon.
Edward Albert Gait.
Sir Francis John Stephen Hopwood.
Julius George Mandello.
Ernest Wahrmann.
Percy Luck Willby.

Mr. George H. Wood read a Paper on "Factory Legislation, "considered with reference to the Wages, &c., of the Operatives "Protected thereby."

In the discussion which followed, the undermentioned took part:—Professor Edgeworth, Miss C. E. Collet, Mrs. Tennant, Mr. George Howell, The President (Lord Avebury), Mr. J. R. MacDonald, Mrs. MacDonald, Miss Collet, and Mr. G. H. Wood in reply.

Seventh Ordinary Meeting, Tuesday, 27th May, 1902, *at the Examination Hall, Victoria Embankment, W.C.*

The Right Hon. Lord AVEBURY, P.C., F.R.S., President, in the Chair.

Lord AVEBURY having left the Chair, his place was taken by Mr. E. W. BRABROOK, C.B., Vice-President.

The following were elected Fellows:—

George Tulloch Bisset-Smith.
Sir Vincent Henry P. Caillard.
Edward Joseph Ecliptsis Craven.
Walter Schindler.
Walter Grason Stott.
Dinsha Edulji Wacha.
Dr. Paul Wolfner.

A Paper, entitled the "Sugar Industry on the Continent," by Monsieur Yves Guyot, was read by Dr. Ginsburg, Secretary.

In the discussion which followed, the undermentioned took part:—Lord Avebury, Mr. Harold Cox, Sir Nevile Lubbock, Sir Robert Giffen, Mr. George Martineau, Mr. W. P. B. Shepheard, Sir A. E. Bateman, Mr. E. W. Brabrook, and Monsieur Guyot in reply.

The arrangements[1] for the

Eighth Ordinary Meeting, to be held on Tuesday, 17*th June,* 1902,

are as follows:—

The Right Hon. Lord AVEBURY, P.C., F.R.S., to be in the Chair.

The following are to be proposed as Fellows:—

Charles James Crosfield.
John William Jagger.

The Paper to be read is "A Study of Some Portions of the "Census of London of 1901," by T. A. Welton, F.C.A.

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[1] The above intended arrangements were duly carried out, except that—Lord Avebury being unavoidably absent—the Chair was taken by Mr. E. W. Brabrook, C.B., Vice-President.

The Candidates were unanimously elected.

In the discussion which followed the reading of Mr. Welton's Paper, the undermentioned took part:—Mr. R. H. Rew, Mr. A. H. Bailey, Mr. J. M. Shaw, Mr. E. W. Brabrook, and Mr. T. A. Welton, F.C.A., in reply.

Numbers of Books Added to the Library and Lent and Numbers of Borrowers from the Library in 1900, 1901, *and part of* 1902.

Months.	Books, &c., Received.*			Books Lent.						Borrowers.			Visitors using the Library (including Borrowers).			Months.
	1900.	1901.	1902.	1900.		1901.		1902.		1900.	1901.	1902.	1900.	1901.	1902.	
				Books.	Vols., &c.	Books.	Vols., &c.	Books.	Vols., &c.							
January	262	260	325	51	75	76	95	76	108	22	37	42	50	66	78	January
February				52	94	43	49	74	87	25	25	39	49	49	63	February
March				48	107	43	73	69	94	29	28	39	46	64	57	March
April	300	300	—	49	109	56	67	33	41	31	36	22	51	91	74	April
May				53	158	61	73	50	58	31	28	24	65	45	50	May
June				56	123	52	72	—	—	31	30	—	52	47	—	June
July	263	280	—	33	69	61	80	—	—	16	26	—	35	52	—	July
August				40	53	46	85	—	—	17	19	—	42	57	—	August
September				17	20	36	39	—	—	11	23	—	31	54	—	September
October	317	320	—	41	64	43	55	—	—	25	25	—	46	58	—	October
November				38	44	69	75	—	—	18	43	—	80	66	—	November
December				45	56	53	73	—	—	26	32	—	34	62	—	December
Year	1,142	1,160	—	523	972	639	836	—	—	282	352	—	581	711	—	Year
Monthly average	95	97	—	43	81	53	70	—	—	23	29	—	48	59	—	Monthly average

* These are the numbers of entries in the quarterly *Journal* under "Additions to Library," and do not represent the number of volumes, &c., of a book; they are also *exclusive* of about 170 periodicals received yearly.

The table on the preceding page is intended to show, as far as is practicable, the growth of the Library during the past two years, and also the extent to which it is used by Fellows of the Society and others. It is estimated that, exclusive of periodicals, about 1,000 publications of varying sizes are received yearly by the Society, most of them being official returns. The periodicals number about 170, and consist of weekly, monthly, and quarterly returns dealing with trade, labour, or vital statistics and the like, and also of proceedings or journals of societies and institutions, and newspapers.

The monthly average number of books lent during 1900 was 43, in 1901 it was 53; the average number of borrowers per month was in the first named year 23, in 1901 it rose to 29. Adding the number of those who visit the library to consult books, the total was 581 in 1900 and 711 in 1901, or an average of forty-eight and fifty-nine persons per month for the two years respectively. These figures show that the increase in the use of the Library, referred to last year, is progressive, and that a more extended circle of our Fellows are finding its value.

In the Report for the last sessional year it was mentioned that His Majesty the King on his accession to the Throne had become Patron of the Society—thus assuming the office which had for so many years been held by his lamented father the late Prince Consort. This change left the office of Honorary President, previously held by His Majesty, vacant. The Council have now the pleasure to announce that in May, 1902, they received an intimation that H.R.H. the Prince of Wales had graciously accepted the position of Honorary President of the Royal Statistical Society, held by his father for nearly thirty years.

In July of last year an announcement appeared in the public press to the effect that the Worshipful Company of Goldsmiths, with a view to preventing a unique collection of economical and statistical works from passing into the possession of another country, had purchased the extensive library which had been accumulated by Professor Foxwell. It was understood that the purchasers were not themselves desirous of retaining possession of the collection, but that they were anxious that it should find a suitable home in the custody of some responsible body. Accordingly a letter in the following terms was addressed to the Prime Warden of the Company:—

ROYAL STATISTICAL SOCIETY,
9, Adelphi Terrace, Strand, W.C., London.
6th July, 1901.

To the Worshipful the PRIME WARDEN
of the Goldsmiths' Company.

SIR,

At the meeting of the Executive Committee of this Society last night, reference was made to the public spirited action of your ancient Company in purchasing the Foxwell Library of statistical and economic works, and in thus preventing so unique a collection of books from leaving this country. It was also stated that the eventual resting place of the library in question is now under your consideration.

This being so, it was resolved that I should approach you with the request that you would grant the Royal Statistical Society the custody of this valued possession.

I need hardly, perhaps, tell you that this Society—which is now incorporated by Royal Charter, and of which His Majesty the King is Patron—was founded as long ago as the year 1834, and is thus the oldest institution exclusively connected with statistical and economic science in this country. During the course of its sixty-seven years it has accumulated what is believed to be the best library of its kind in the United Kingdom, and it appears to the Executive Committee that the union of these two libraries under one roof would be a matter of great convenience to all students in the branches of science concerned.

The Society already possesses the Newmarch Library, which is in this way a memorial of a distinguished statistician and economist.

I am instructed to say that if the Society's application were to be entertained, it would undertake that the Foxwell Library should be kept quite distinct from that of the Society, and should not only retain the name of the professor, but should also carry a plate or plates relating the circumstances under which it passed into the Society's possession, and recording the munificence of the Goldsmiths' Company. It would be arranged that the library should be accessible to persons other than members of the Society, and that a special committee (on which not only the Royal Statistical Society, but also the Goldsmiths' Company, the British Economic Association, and other bodies, as agreed, should be represented) should manage the affairs of the library, and in every way the Society would endeavour to meet the wishes of your Company.

I have further to add that whilst on account of the urgency of the matter I make this application by order of the Executive

Committee of the Council, the Council itself will at its meeting on the 11th instant, consider the subject, and will no doubt approach you in a more formal way thereafter.

In view of their meeting on that date, I should esteem it a favour if you would give me an intimation as to whether you would be disposed to receive a deputation from the Society on the matter, and if so to tell me of how many persons it should consist, and when and where it would be convenient to you to receive it.

I have the honour to be,
SIR,
Your obedient Servant,
BENEDICT W. GINSBURG,
Secretary.

The letter was duly acknowledged, but it was understood that no action could be taken by the Company in regard to the disposal of the library for some months, and perhaps even a couple of years, as the work of cataloguing it has to be completed before any decision could be reached by its new owners.

The resignation of Major Craigie from the position of Honorary Secretary has been received with much regret, and the Council desire to place on record the great appreciation in which they hold the services which he has performed for the Society during his long connection with it. Joining the Society twenty-eight years ago, he was first elected to the Council in the year 1878. He became an Honorary Secretary in 1887, and Honorary Foreign Secretary ten years later.

The Council, whilst expressing their gratitude for his past services, trust that he will still remain of their number, and that the benefit of his statistical authority, and of his knowledge of their affairs, will be available to the Society in another office.

The lease of the Society's premises in Adelphi Terrace falls in at Lady Day, 1904, and the Council in the month of May learnt that the landlord is unable to make any definite arrangements as to the future of the estate, of which the Society's house forms a part. It is proposed therefore to extend the tenancy for a period, subject to two years' notice on either side. This arrangement, though it removes the immediate necessity of a change of home, does not bring a final settlement of a very grave problem. The question of the housing of the library, with its constantly increasing accumulation of books and periodicals, is a very important one. It may be desirable that a small Committee should be appointed to endeavour, in the event of a move becoming necessary, to find premises which may prove suitable not only for the Society's present accommodation, but also for receiving the additional volumes which a few years will bring to its store.

With deep regret the Council announces the death of one of their number. Mr. Horace George Bowen, who had been a Fellow of the Society since the year 1876, and a member of the Council since 1899, died somewhat suddenly on the 6th May, 1902. Mr. Bowen had not of late been able to continue his attendance at the Society's meetings, having some months ago undergone a severe operation which incapacitated him from following his former avocations; but his interest in the Society and its affairs continued unabated, and the Council are desirous of taking this opportunity of recording their appreciation of the valuable assistance which he rendered to them at the time when their investments in public securities were taken from the name of the trustees and placed in the Society's own name.

It is with much satisfaction that the Council reports that the alteration made last year in the method of the publication of the *Journal*, whereby the duty previously performed by a firm of publishers was taken over by the Society itself, and carried out by its own staff, has proved satisfactory, the change having caused no decrease in the number of sales, whilst a considerable economy has been effected.

In view of the large increase in recent years of the number of statistical publications at home and abroad, it has been felt desirable that the catalogue of the library should be brought up to date. A considerable amount of work will be involved in carrying out this design, which is likely to occupy some time. But a commencement has been made during the year, and a large number of entries have been already prepared under the direction of the Librarian.

The Committee appointed in the session 1901-02, for the purpose of inquiring into the Production and Consumption of Meat and Milk in the United Kingdom, has held several meetings, and done a good deal of work during the year. Under the direction of Mr. R. H. Rew (the Reporter to the Committee), it has amassed and tabulated a considerable body of information. An interim report has been submitted to the Council, and ordered to be submitted to the Society at the June meeting. Some 3,000 copies of the schedules of inquiry have already been circulated, and a large number of replies to them have been received. It is felt however that the field may be usefully extended somewhat further, and accordingly the Committee, in presenting its report, expresses the hope that it should be allowed to continue its labours.

Under Rule 3 of the rules for the award of the Guy Medal, the Council have awarded a medal in silver to Mr. Reginald H. Hooker, M.A., for his paper on "The Suspension of the Berlin "Produce Exchange, and its Effect on Corn Prices," which was read before the Society at its meeting on the 17th December, 1901.

In accordance with the decision of the Council announced in the Annual Report of last year, no offer of the Howard Medal was made during the session now closing. It is proposed, however, that during the session 1902-03 the Howard Medal (together with 20*l.*) shall be offered, subject to the usual conditions, for an Essay on the "Alleviation of the Evils of Overcrowding by the "Development of the Means of Transit."

Following the practice which had been re-established in the previous year, the Secretary was deputed to attend the meeting of the British Association at Glasgow. The *Journal* has already reproduced the address with which Sir Robert Giffen opened the proceedings of the Economics and Statistics section, as well as the papers on "The Correlation of the Marriage-Rate with Trade" by Mr. Hooker, and on "Shipping Subsidies" by Dr. Ginsburg. Mr. A. L. Bowley also contributed a paper on "Wages in "Glasgow," whilst Mr. E. Cannan discussed the question of "The Decline of Natality in Great Britain." The Committee on the Economic Effect of Legislation Regulating Women's Labour, under the presidency of Mr. E. W. Brabrook, C.B., appointed at the Bradford Meeting, presented its first report, and was re-appointed for further investigation, whilst a joint discussion regarding the subject of Economics and Commercial Education, between the members of Section F and those of the newly established Educational Science Section, was opened by Mr. L. L. Price.

The *Journal* has already contained a brief report of the Proceedings of the Eighth Congress of the International Statistical Institute at Buda-Pesth, in the autumn of 1901. Major Craigie and Mr. F. Hendriks were the British representatives present.

The cordial thanks of the Council have been tendered on behalf of the Society to the Auditors for their honorary services in auditing the Treasurer's accounts for the past year.

The following Fellows (nominated in accordance with Bye-law 14) are recommended for election as President, Council and Officers of the Society for the Session 1902-03:—

Council and Officers for 1902-03.

PRESIDENT.

MAJOR PATRICK GEORGE CRAIGIE.

COUNCIL.

William Mitchell Acworth, M.A.
*Arthur Hutcheson Bailey, F.I.A.
J. A. Baines, C.S.I.
Henry Birchenough, M.A.
Sir James Blyth, Bart.
Arthur Lyon Bowley, M.A.
Edward W. Brabrook, C.B., F.S.A.
Nathaniel Louis Cohen.
Richard Frederick Crawford.
Frederick Charles Danvers.
*The Rt. Hon. Sir C. W. Dilke, Bart., M.P.
Geoffrey Drage, M.A.
Prof. F. Y. Edgeworth, M.A., D.C.L.
Sir John Glover.
Alfred Spalding Harvey, B.A.
Noel A. Humphreys.
Charles S. Loch, B.A.
*John Macdonell, C.B., LL.D.
Richard Biddulph Martin, M.A., M.P.
Sir R. G. C. Mowbray, Bart., M.P.
Francis G. P. Neison, F.I.A.
Thomas J. Pittar, C.B.
*Sir Francis Sharp Powell, Bart., M.P.
Richard Price-Williams, M.Inst.C.E.
Robert Henry Rew.
*William Napier Shaw, M.A., F.R.S.
Hubert Llewellyn Smith, M.A., B.Sc.
Thomas Abercrombie Welton, F.C.A.
*B. Arthur Whitelegge, M.D.
George Udny Yule.

Those marked * are new Members of Council.

TREASURER.

Richard Biddulph Martin, M.A., M.P.

HONORARY SECRETARIES.

Noel A. Humphreys. | J. A. Baines, C.S.I.
R. H. Rew.

HONORARY FOREIGN SECRETARY.

J. A. Baines, C.S.I.

Statement of the Condition of the Society in the last Twenty-five Years 1877-1901.

Year.	Number of Fellows on 31st December.	Number of Compounders included therein.	Losses during Year by Deaths, &c.	Gains by Election, &c., during Year.	Income from					Expenditure.			Amount Invested on 31st December.	Year.
					Annual Subscriptions.	Compositions.	Journal Sales.	Investments and other Sources.	All Sources.	Total.	Of which On Journal.	Of which On Library.		
					£	£	£	£	£	£	£	£	£	
1877....	683	101	40	112	1,117	252	151	77	1,597	1,476[a]	474	49	1,471	1877
'78....	746	115	45	108	1,197	294	169	72	1,732	1,849[a]	580	32	2,000	'78
'79....	783	119	52	89	1,300	126	176	96	1,698	1,808[a]	671	34	2,400	'79
1880....	808	129	49	74	1,317	273	202	110	1,902	1,806[a]	573	80	2,700	1880
'81....	807	130	45	44	1,306	84	145	114	1,649	1,697[a]	609	37	3,000	'81
'82....	786	135	63	42	1,291	189	227	131	1,838	1,782[a]	553	60	3,200	'82
'83....	860	139	41	115	1,361	126	150	141	1,778	1,943[a]	585	49	3,500	'83
'84....	909	150	57	106	1,447	294	207	1,198	3,146[b]	3,088[e]	645	38	2,500	'84
'85....	928	148	55	74	1,462	63	188	349	2,062[d]	2,070[c]	625	27	2,500	'85
'86....	943	156	70	85	1,583	231	180	92	2,086	2,106[e]	735	32	2,500	'86
'87....	977	160	59	93	1,621	126	188	94	2,029	2,135[f]	609	87	2,500	'87
'88....	1,059	172	58	140	1,686	334	171	101	2,292	2,003	711	58	2,500	'88
'89....	1,060	175	69	70	1,678	126	229	82	2,115	2,060[g]	623	146	2,500	'89
1890....	1,063	177	65	68	1,764	84	155	94	2,097	2,096[a]	567	68	2,900	1890
'91....	1,019	172	80	36	1,707	42	146	181	2,076[h]	1,957[i]	582	172	2,900	'91
'92....	994	171	70	45	1,634	84	158	104	1,980	1,883[j]	539	94	2,900	'92
'93....	964	176	66	36	1,560	124	128	92	1,904	1,921	578	63	2,900	'93
'94....	933	180	67	36	1,491	105	152	82	1,830	1,904	649	75	2,900	'94
'95....	928	180	59	54	1,468	63	180	82	1,793	1,823[k]	576	56	2,900	'95
'96....	910	181	48	30	1,478	42	168	84	1,772	1,787	571	44	2,900	'96
'97....	892	182	58	40	1,472	145	157	83	1,857	1,986[l]	650	50	2,900	'97
'98....	878	180	57	43	1,451	115	182	105	1,853	1,825	609	55	3,300[m]	'98
'99....	896	181	44	62	1,432	95	167	127	1,821	1,805	564	33	3,300[m]	'99
1900....	923	179	36	63	1,514	21	189	148	1,872	1,817	521	53	3,300[m]	1900
'01....	926	177	49	52	1,464	63	211	129	1,867	1,823	518	42	3,300[m]	'01

[a] Includes purchase of Government stock.
[b] Includes sale of 1,000*l.* stock.
[c] Includes expense of moving to new premises.
[d] Includes Dr. Guy's legacy of 250*l.*
[e] Includes cost of Jubilee Volume.
[f] Includes cost of Catalogue and Index, and of Charter.
[g] Includes cost of part iv of Index to Journal.
[h] Includes Mrs. Lovegrove's legacy of 100*l.*
[i] Includes outlay for Guy Medal and for binding the "Times."
[j] Includes outlay for drainage repairs.
[k] Includes cost of Subject-Index to *Journal.*
[l] Includes cost of doing up interior of premises.
[m] 2,900*l.* consols and 400*l.* G.N.R. stock, purchased with Mr. J. Heywood's Legacy of 500*l.*

The abstract of receipts and payments, and the estimate of assets and liabilities on 31st December, 1901, are subjoined, together with the report of the Auditors on the accounts for the year 1901:—

(I.)—ABSTRACT *of* RECEIPTS *and* PAYMENTS *for the* YEAR *ending* 31*st* DECEMBER, 1901.

RECEIPTS.		£	s.	d.
Balance in Bank, 31st December, 1900 ...	£309 16 3			
Balance of Petty Cash.	29 14 4			
„ Postage Account	4 19 9	344	10	4
Dividends on 2,900*l.* Consols and 400*l.* G.N.R. Stock		88	14	2
Annual Subscriptions:—				
34 Arrears	£71 8 -			
650 for the year 1901	1,365 - -			
13 in Advance	27 6 -	1,463	14	-
697				
Compositions		63	-	-
Journal Sales		210	12	4
Advertisements in Journal		40	6	6
Total		£2,210	17	4

PAYMENTS.		£	s.	d.
Rent, less Tax	£356 5 -			
Less sublet	62 10 -	293	15	-
Rates and Taxes		58	12	3
Fire, Lights, and Water		40	13	10
Furniture and Repairs		19	5	-
Salaries, Wages, and Pension ...		590	17	6
Journal, Printing......	£476 7 8			
„ Shorthand Reporting	30 - -			
„ Literary Services	11 18 -	518	5	8
Ordinary Meeting Expenses		21	6	6
Advertising		26	6	3
Postage and delivery of Journals..		72	16	3
Stationery and Sundry Printing...		61	18	6
Library		42	5	8
Incidental Expenses		75	13	6
Guy Medal		1	10	-
		1,823	5	11
Balance per Bank Book	£362 16 6			
Balance of Petty Cash	19 17 8			
„ Postage Account	4 17 3	387	11	5
Total		£2,210	17	4

(Signed) "A. H. BAILEY,
"CHAS. ATKINSON,
"THOMAS A. WELTON, F.C.A., } *Auditors.*"

"*6th February*, 1902.

(II.)—ESTIMATE *of* ASSETS *and* LIABILITIES *on* 31*st* DECEMBER, 1901.

LIABILITIES.	£	s.	d.	ASSETS.	£	s.	d.
Harrison and Sons, for December Journal	137	15	7	Cash Balances	387	11	5
Miscellaneous, as per list	134	19	6	2,900*l.* New 2¾ per cent. Consols cost	2,760	14	5
13 Subscriptions received in advance	27	6	-	400*l.* G.N.R. Preferred Converted Stock cost	484	11	6
	300	1	1				
Balance in favour of the Society ... (Exclusive of (1) the Reversionary Interest bequeathed to the Society by the late Dr. Guy; (2) Books in Library; (3) Journals, &c., in Stock; and (4) Pictures, Furniture, and Fixtures.)	3,458	3	-	Arrears of Subscriptions recoverable (25)	52	10	-
				Sundry debtors	72	16	9
	£3,758	4	1		£3,758	4	1

(Signed) "A. H. BAILEY,
"CHAS. ATKINSON,
"THOMAS A. WELTON, F.C.A., } *Auditors.*"

"*6th February*, 1902.

(III.)—BUILDING FUND (ESTABLISHED 10*th July*, 1873), BALANCE SHEET, *on* 31*st* DECEMBER, 1901.

This Fund is invested in Metropolitan Consolidated Three and a Half per Cent. Stock. On the 31st December, 1900, there was invested 295*l.* 18*s.* 1*d.* in this account. During the year a sum of 9*l.* -*s.* 1*d.*, received as dividends, has been re-invested in same Stock by the Bank of England for the Society. Accordingly, on the 31st December, 1901, the total investment amounted to 304*l.* 18*s.* 2*d.* Stock.

"REPORT OF THE AUDITORS FOR 1901.

"*The Auditors appointed to examine the Treasurer's Accounts of the Society for the Year* 1901,

"REPORT:—

"*That they have compared the Entries in the Books with the several Vouchers for the same, from the* 1*st January to* 31*st December,* 1901, *and find them correct, showing the Receipts (including a Balance of* 344*l.* 10*s.* 4*d., from* 1900) *to have been* 2,210*l.* 17*s.* 4*d., and the Payments* 1,823*l.* 5*s.* 11*d., leaving a Balance in favour of the Society of* 387*l.* 11*s.* 5*d. at the* 31*st December,* 1901.

"*They have also had laid before them an Estimate of the Assets and Liabilities of the Society at the same date, the former amounting to* 3,758*l.* 4*s.* 1*d., and the latter to* 300*l.* 1*s.* 1*d., leaving a Balance in favour of the Society of* 3,458*l.* 3*s. –d., exclusive of* (1) *The Reversionary Interest bequeathed to the Society by the late Dr. Guy.* (2) *Books in the Library.* (3) *Journals, &c., in Stock, and* (4) *Pictures, Furniture, and Fixtures.*

"*The Building Fund at the end of the year* 1900 *was invested in* 295*l.* 18*s.* 1*d. Metropolitan Consolidated Three and a Half per Cent. Stock, and, with the Dividends received during* 1901, *additional Stock to the amount of* 9*l. –s.* 1*d. was purchased by the Bank of England for the Society. Accordingly on the* 31*st December,* 1901, *the total investment amounted to* 304*l.* 18*s.* 2*d. Stock.*

"*They have verified the Investments of the Society's General Funds and the Building Fund, and also the Banker's Balance, all of which were found correct.*

"*They further find that at the end of the year* 1900 *the number of Fellows on the list was* 923, *which number was diminished in the course of the year to the extent of* 49, *by Death, Resignation, or Default, and that* 52 *new Fellows were elected, leaving on the list on the* 31*st December,* 1901, 926 *Fellows of the Society.*

(Signed) "A. H. BAILEY,
"CHAS. ATKINSON,
"THOMAS A. WELTON, F.C.A., } *Auditors.*"

"*6th February,* 1902.

PROCEEDINGS *of the* SIXTY-EIGHTH ANNUAL GENERAL MEETING.

Mr. E. W. BRABROOK, C.B., Vice-President, in the Chair.

THE circular convening the meeting was read by the Secretary.

The minutes of the last ordinary meeting having been read and confirmed,

The CHAIRMAN announced that the Guy Medal, in silver, had been awarded to Mr. R. H. Hooker, M.A., for his paper on "The Suspension of the Berlin Produce Exchange, and its Effect on Corn Prices," read before the Society at its meeting on the 17th December, 1901.

The CHAIRMAN next announced that the subject chosen for the Howard Medal Competition, 1902-03, was the "Alleviation of the Evils of Overcrowding by the Development of the Means of Transit."

The CHAIRMAN then formally moved the adoption of the Report (which was taken as read, after being briefly summarised by the Secretary), and the motion, being seconded by Mr. J. Barr Robertson, was carried unanimously.

Mr. R. H. REW, the Reporter to the Committee appointed in the previous session for the purpose of inquiring into the Statistics available as a Basis for Estimating the Production of and Consumption of Meat and Milk in the United Kingdom, presented the Committee's interim report. He considered the steps already taken by the Committee, and referred to the inquiries which were still in progress, and especially to the proposed issue of a schedule to householders, in which the Committee relied on the active co-operation of the general body of Fellows. He adverted to the great assistance which the Committee had received from Mr. R. E. Turnbull, who had supplied the Committee with most exhaustive communications, which had proved of great value to his colleagues in their deliberations.

The CHAIRMAN moved that the thanks of the Society be given to the Committee for this preliminary report, and the motion was unanimously agreed to.

Mr. JESSE ARGYLE and Mr. SAMUEL CHAPMAN were appointed scrutineers of the ballot.

The SECRETARY then read the names of twelve Fellows who were four years in arrear in the payment of their subscriptions, and the CHAIRMAN, having declared them to be no longer Fellows of the Society, ordered that their names be erased from the list of the members of the Society.

The SCRUTINEERS reported that the proposed President, Council, and Honorary Officers had been unanimously elected.

On the motion of the CHAIRMAN, a vote of thanks was passed to the Scrutineers.

Sir ERNEST CLARKE moved a vote of thanks to the President, Council, and Honorary Officers for their services during the past session, and to the Chairman for presiding on the present occasion. In the course of his remarks the speaker referred to the desirability of the acquisition of the Foxwell Library by the Royal Statistical Society, and expressed the hope that no effort would be spared towards its attainment. Professor Foxwell was a bibliophile of great skill, and on the speaker's own subject of agriculture the collection contained some works of extraordinary interest and value. He sincerely hoped that the Goldsmiths' Company would place that magnificent Library in the charge of their old-established Society.

The motion was seconded by Mr. W. H. BARFOOT-SAUNT, and supported by Mr. A. H. BAILEY, who referred especially to the important work which Lord Avebury had done for the Society during the term of his office now closing.

The CHAIRMAN having acknowledged the vote of thanks, the proceedings terminated.

The SUGAR INDUSTRY *on the* CONTINENT.

By YVES GUYOT.

[Read before the Royal Statistical Society, Tuesday, 27th May, 1902. The Right Hon. LORD AVEBURY, P.C., F.R.S., D.C.L., LL.D., President, in the Chair.]

I.—*Objects and Results.*

THIS is not the first time that the question of sugar has been discussed before the Royal Statistical Society, Mr. Martineau having read an important and exhaustive paper on this subject in 1899, and I feel greatly the honour which the Royal Statistical Society has conferred upon me in asking that I should address them also on this subject, which I shall treat from the point of view that was prevalent on the Continent prior to the recent Sugar Conference at Brussels.

The results of sugar legislation are an interesting study, apart from its effects on the sugar industry, because of its teaching to both those who call for, and to those who object to State intervention in the economic life of nations.

The whole sugar industry of Europe is based on the system of bounties, enumerated as follows in the Sugar Convention of the 5th March, 1902:—

(*a.*) Direct bounties given on export.
(*b.*) Direct bounties given on production.
(*c.*) Total or partial exemption from taxation in the case of a part of the production.
(*d.*) Profit on excess of yield.
(*e.*) Bonus resulting from exaggeration of drawback.
(*f.*) Advantages resulting from any surtax on foreign sugars of a higher rate than 6 frs. per 100 kilos. for refined sugar and 5 frs. 50 c. for other sugars.

In truth, it may be said that until the 1st September, 1903, at which date the Brussels Convention comes into force, all European legislation regarding sugar had the following points in common:—

(*a.*) To stimulate the production of sugar.
(*b.*) To limit its home consumption, and
(*c.*) To encourage its foreign consumption.

To obtain these results, bounties on the production of sugar are given openly in France, and indirectly in Belgium and Russia. Direct bounties on the exportation of sugar are given in Germany, Austria-Hungary, and, since the law passed in 1897, in France. An additional customs duty (*surtaxe*) of 20 marks (25 frs.) is charged in Germany, and of 11 fls. (gold) (27 frs. 50 c.) in Austria-Hungary, and it is these duties which allow of the establishment of the *cartels* in these two countries.

II.—*A Political Industry.*

The bounty system was introduced into France by a law passed on the 28th September, 1648, which authorised the exportation of raw sugar, and by way of compensation gave to the refiners a bounty of 9 livres 15 sous per quintal of exported sugar. Bounties on sugar were abolished by the law of 15th March, 1791, re-established by the law of 8 Floréal, year XI, and raised to 110 frs. in 1819. Since then the sugar question has been a constant subject of discussion and controversy to the French Government, who wished to treat with equal favour the French Colonial cane sugars and the beet sugar of the mother country. To show to what an extent the Government have been puzzled by this question, a proposition was made in January, 1843, to buy up the whole of the beet sugar industry in France for a sum of 40 million francs, and to entirely forbid henceforth the making of beet sugar. If this proposal, which was warmly supported by Berryer and Lamartine, had been carried, much time and many parliamentary intrigues would have been spared the Government, and the French taxpayers and consumers would have been saved many hundreds of millions of francs. It can well be said of the sugar industry, that it has never been carried on with the object of producing an article of sale which would yield a profit above its cost price. It is a political industry, which has always had to rely on the bounty as its basis of profit.

III.—*The Manufacturers' Profit, Rebates for Colonial Sugars, and Détaxes de Distance.*

These were organised in 1884 by the law of 29th July, which was brought forward by M. Meline, and for which M. Ribot was reporter. Almost immediately afterwards the production of sugar in excess of the standard yield (*quotité des excédents*) reached 31·21 per cent., with the result that the law had to be altered by laws passed in 1887, 1888, 1890, and lastly by the law passed on the 29th June, 1891, which organised the present system.

All this legislation is based on the following principle: The duty is calculated on too low a yield of sugar from the beetroot; the sugar produced in excess is partially exempt from taxation; and the difference between the sugar taxed and the sugar produced represents the bounty or bonus of the manufacturer.

Thus the legal yield is fixed at 7 kilos. 750 grs. of sugar per 100 kilos. of beet; from 7 kilos. 750 grs. to 10 kilos. 500 grs. of sugar, expressed in refined, the sugar, instead of being taxed at the rate of 60 frs. per 100 kilos., is only taxed at the rate of 30 frs. When the yield exceeds 10 kilos. 500 grs., one-half is liable (*passible*) to the duty of only 30 frs., the other half being liable to the duty of 60 frs., that is to say, a duty of 45 frs.

If a manufacturer has used 10 million kilos. of beet yielding 11·50 per cent. of refined sugar, his account is liquidated as follows:—

			Frs.
775,000	kilos. of sugar	at 0·60 =	465,000
275,000	„	„ 0·30 =	82,500
50,000	„	„ 0·60 =	30,000
50,000	„	„ 0·30 =	15,000
1,150,000			592,000

This means to the manufacturer an average duty of 51 frs. 52 c. per 100 kilos. of refined sugar, and gives him a bonus of 8 frs. 48 c. per 100 kilos. of refined sugar, or of 9 frs. 75 c. per ton of beets. In other words, it is charging the normal duty of 60 frs. on only 987,500 kilos. of refined sugar, whereas 1,150,000 kilos. has really been produced.

The manufacturer who does not sell his sugar direct to the consumer receives his bonus by means of a delivery order (*certificat d'enlèvement*), which entitles him to the reduced duty for sugars in excess of the legal yield. Henceforth these excess sugars are included (*assimilés*) with the sugars liable to the normal duties, and are issued under the guarantee of the same excise bonds (*acquits-à-caution*), and are warehoused or entered for temporary admission under the same conditions.

The delivery order is made out in the name of the manufacturer by the chief of the factory delivering the sugar (*fabrique expéditrice*). It is taken from a register with counterfoil, bears a *talon de controle*, and states besides the names of the consignee (*titulaire*), the nature of the sugar, and from whence it comes, and the quantity, expressed in refined, which the sugar represents.

These certificates are transferable after endorsement and are received at the time of payment of the duties, either when the sugar leaves the factory or the warehouses, or when in transit, or on the expiration of the *obligations d'admission temporaire.* The presentation of these delivery orders entitles the holder to the reduced tariff for the home grown or French colonial sugars to which they apply.

The sugar manufacturer negotiates his delivery orders, generally selling them to the refiner. If they relate to an excess yield between 7 kilos. 750 grs. to 10 kilos. 500 grs., the holder of them has only to pay 30 frs. instead of 60 frs. to clear himself, and this he can do on any sugar, as there is nothing to distinguish the excess yield from sugar which pays the whole of the duty.

In a word, the sugar manufacturer cashes his bounty by selling his delivery orders (*certificats d'enlèvement*).

The price of these delivery orders, which are bought by the refiners, averages 29 frs. 40 c. With the brokers' commission, and the four months' interest which they on an average represent, their exact value is 29 frs. 817 c. for a nominal value of 30 frs. The profit of the refiner is therefore 0·193 fr. or less than 20 c. per 30 frs., or 0·65 c. per cent.

As regards colonial sugars, the French Government at the end of each campaign calculates the profit due to the home industry, and they have the right to an equal rebate (*déchet de fabrication égal*).

The law of 1897 allows a rebate (*détaxe*) of 2 frs. per 100 kilos. of home-grown (*indigène*) sugar shipped from northern French ports to French ports on the Atlantic and the Mediterranean to be refined for exportation thence. The rebate is also 2 frs. per 100 kilos. for sugar from the (French) West Indies, and 2 frs. 50 c. for sugar from Réunion imported into France.

There is a manufacturing duty of 1 fr. on raw sugars not going to the refinery, and a refining tax of 4 frs., which go to pay the direct bounties on export, but this fund must suffice, so that the amount of the bounty is reduced yearly if the refinery tax has been too small to cover it in the preceding year.

Originally fixed at 4 frs. per 100 kilos. of refined sugar for sugars of 98 degrees, and at 4 frs. 50 c. for refined loaf or cubes, it has now fallen to 1 fr. 78 c., and 2 frs. for the campaign of 1901-02, and it would have automatically fallen to zero if the Brussels Conference had not decided on its suppression in 1903.

IV.—*The Effects of Sugar Legislation in France.*

The law of 1884 had two objects: To increase the production and quality of the roots; to give a great development to the manufacture of sugar. It has succeeded; it has even had too much success. The following table shows the total production of sugar (expressed in refined) in France from 1884-85 to 1900-01:—

[000's omitted.]

Seasons from 1st September to 31st August.	Total Sugar Production in France. Refined.	Seasons from 1st September to 31st August.	Total Sugar Production in France. Refined.	Seasons from 1st September to 31st August.	Total Sugar Production in France. Refined.
	Kilos.		Kilos.		Kilos.
1884-85 ...	272,962,	1890-91....	615,242,	1896-97	668,546,
'85-86 ...	265,084,	'91-92....	577,821,	'97-98	730,067,
'86-87	434,044,	'92-93....	523,366,	'98-99	737,902,
'87-88	344,745,	'93-94....	514,789,	'99-1900	869,201,
'88-89	412,523,	'94-95....	704,454,	1900-01	1,010,290,
'89-90	699,366,	'95-96....	593,647,		

The tax is levied on the raw material, the yield of which is much under-estimated. The following table shows the yields in excess which are entitled to the reduced duty, their proportion to the total production, the remission of duty per 100 kilos., and its total amount for the years 1884-85 to 1900-01:—

Seasons.	Yields in Excess Entitled to the Reduced Duty. (000's omitted.)	Percentage of Excess Yields to Total Production.	Bonus of the Duty on the Excess Yield. Per 100 Kilos.	Amount of Bonus for Home Grown Sugars. (000's omitted.)
	Kilos.		Frs.	Frs.
1884-85	39,645,	14·53	50	19,822,
'85-86	77,953,	29·43	50	38,977,
'86-87	157,781,	36·44	50	78,890,
'87-88	94,761,	27·24	50	47,381,
'88-89	108,673,	26·19	40	43,469,
'89-90	199,949,	28·54	40	79,980,
'90-91	119,368,	19·35	30	35,810,
'91-92	137,772,	23·83	30	41,332,
'92-93	101,905,	19·47	30	30,571,
'92-94	109,057,	21·19	30	32,717,
'94-95	153,130,	21·73	30	45,939,
'95-96	159,601,	26·88	30	47,880,
'96-97	144,485,	21·61	30	43,346,
'97-98	204,456,	28·00	30	61,337,
'98-99	216,227,	29·30	30	64,868,
'99-1900	249,645,	28·72	30	74,893,
1900-01	301,456,	28·97	30	90,437,
Total for the seventeen seasons	—	—	—	877,649,

From these should be deducted the duty of 0·30 c. per ton of beets, which has been paid since the campaign of 1887-88. This for a total of 85,300,000 tons of beets in fourteen years, gives a sum of 25,589,776 frs. The bounty on manufacture is therefore over 852 million francs.

An examination of these tables shows that:—

1. The increase in the production of sugar in France from 1884-85 to 1899-1900 has been from 272,962 tons to 1,040,290 tons, or 281 per cent.

2. At the third campaign, after the application of the law of 1884, the bounties had risen to nearly 79 million francs a year, and it was therefore found necessary to modify the law, which, however, had fixed the rates up to 1900-01. But three years later the bounties had again risen to nearly 80 million francs; and a further change was found necessary to prevent the whole of the duty being paid away in bounties.

In 1899-1900 the bounty was close on 75 million francs, and in 1900-01 it amounted to nearly 88 million francs, after deducting the 0·30 c. tax per ton of beets.

The bounty on colonial sugars is calculated by the authorities themselves. Thus, for 1899-1900 the quantities of sugar which benefited from the reduced tariff amounted to 28·72 per cent. of the total production, and this figure represents the colonial deduction for the season 1900-01.

I give below an example of this correlation:—

	Bonus to the Manufacturer in the Mother Country.	Corresponding Colonial Rebate in Francs, per 100 Kilos. of Refined Sugar.		Bonus to the Manufacturer in the Mother Country.	Corresponding Colonial Rebate in Francs per 100 Kilos. of Refined Sugar.
	Frs.			Frs.	
1895-96....	8·06	6·52	1899 1900	8·62	8·79
'96-97....	6·48	8·06	1900- '01	8·97	8·62
'97-98....	8·40	6·48			
'98-99....	8·79	8·40	'01- '02	—	8·97

There are, on an average, about 100,000 tons of colonial sugar imported yearly into France. The actual figures for the last three years (*commerce général*) are—

	Tons Represented in Weight of Refined.
1899	100,207
1900	90,993
'01	108,590

of which were re-exported—

	Tons.
1899	30,695
1900	35,051
'01	38,268

there remains therefore in the country about two-thirds of the colonial imported sugar, which goes to overburden the already excessive production of the mother country, and this is caused by the bounties on transit (*détaxes de distance*) which turn away from their natural markets the sugars of the French West Indies and of Réunion.

We have seen that the total of the bounties, after deducting the duty of 0·30 c. per ton of beet, amounted for the period 1884-85 to 1900-01, to over 852 million francs. Taking the value of a sugar factory that has been working for several years at about 40 frs. per ton of beet worked yearly, and as there are 339 factories in France with an annual output of about 8 million tons of beet, their total value would be about 320 million francs. The nation has therefore paid to the owners of these factories 166 per cent. over and above their value.

As regards colonial sugars, about 1,250,000 tons of cane, at about 10 per cent., are worked yearly, which, reckoned at the value of 40 frs. per ton, would give 50 million francs. The French taxpayer has therefore, during a period of seventeen years, paid 160 million francs to keep up an artificial and stationary production, the capital of which is not worth 50 million francs.

To secure the vote and the maintenance of the law, its defenders never cease to declare that beetroot cultivation is the salvation of French agriculture, and that the wheat production is dependent upon it.

The manufacturers, who generally supply the seeds to the farmer, have devoted too much attention to developing the growth of beets rich in sugar.

If we multiply the yield of beets per hectare by their price as given in the returns of indirect taxation, we arrive at the following figures:—

	Gross Product per Hectare. Frs.		Gross Product per Hectare. Frs.
1881–82	700	1884–85	592
'82–83	729		
'83–84	727	'85–86	667

From this it can be seen that the law of 1884, instead of producing an increase in the gross product per hectare, caused a decrease of over 4·80 per cent. In the last five years the situation has been as follows:—

Years.	Price of Beets per 100 Kilos.	Total per Hectare.	Years.	Price of Beets per 100 Kilos.	Total per Hectare.
	Frs.	Frs.		Frs.	Frs.
1896-97....	24·30	667·70	1899–1900	30·06	836·63
'97-98....	25·97	719·57			
'98-99....	30·24	778·49	1900– '02	29·71	856·54

Between the earliest and latest dates there is an increase of 22 per cent., but since 1884 the yield has exceeded 700 frs. in eight only out of the fifteen seasons, namely, in 1886-87, 1889-90, 1890-91, 1894-95, 1897-98, and the three following years.

In 1883-84 there were 240,000 hectares under beet cultivation, in 1896 there were but 246,000 hectares, and in 1898-99 the area under beet had again fallen to 237,000 hectares; in 1899-1900 it had risen to 265,684, and in 1901 to 302,366. M. D. Zolla, the eminent Professor at the Agricultural College of Grignon, speaking on this subject at a meeting of the Society of Political Economy on the 5th December, 1900, said: "In fact, the beet growers are "only interested in the results of the law of 1884 when they "happen to be shareholders in sugar factories. The dividends "which they receive as such compensate them, entirely or partially, "for any loss which they may incur owing to the falling off in the "weight of the beets grown. There is no doubt that the law of "1884 is a dangerous one, and it cannot be really said that it has "increased either the gross product or the profits of agriculture."

The farmers complain that the factories buy their beets at too low a price. This is not surprising; but what is hard to understand is the statement made in March, 1901, by M. Ribot, who was reporter of the law in question, that the sugar factories ought not to pay less than 24 frs. a ton for beets of 7 degrees of density. The factories assert that all the profits go to those who cultivate the beet, in which case the 852 million francs of bounties would have been distributed over the 260,000 hectares; this would give a mean of 2,833 frs. per hectare, which is almost the value of the land! The fact is, the division of profits is regulated by the law of supply and demand.

But then, what is this very preponderating share attributed to beetroot cultivation in French agriculture? The area under beets at the utmost is 300,000 hectares, and compared with the 7 million hectares under wheat, represents but 4·28 hectares per 100 hectares of wheat; compared with the 1,631,000 hectares of vineyards, the proportion is 17 per 100; and compared with the 35 million hectares of arable land the proportion is 1 per 116.

As a matter of fact there are only five departments interested in this industry, which, by calling itself national, has succeeded in obtaining for itself far more than its fair share of parliamentary solicitude and protection. The following table shows the position of the industry in the five departments referred to:—

Departments.	Total Weight of Beets Worked.	Quantity of Sugar Extracted, Expressed in Refined.	Number of Factories.
	Tons.	Tons.	
Nord	1,858,400	211,371	83
Aisne	1,858,171	233,720	74
Somme	1,473,689	174,514	50
Pas-de-Calais	1,181,784	133,482	40
Oise	725,146	90,093	30
	7,097,190	843,180	277
Other departments	1,620,249	197,114	57
	8,717,439	1,040,294	334

From the above table it will be seen that over 80 per cent. of the total production of beets and sugar, and 277 out of 334 factories, are contained in five departments out of a total of eighty-seven.

From this it is easy to gauge the extent to which this sugar legislation is for the benefit of the privileged few at the cost of the many.

The French consumer of sugar pays 60 frs. consumption duty (*de consommation*), and 4 frs. tax on refining, making 64 frs., without counting the tax of 0·30 c. per ton of beets, and the supervision tax on refineries of 0·40 c. To this, however, should also be added the export bounty, which further raises the price of sugar to the consumer to an extent equal to the bounty. The French householder has therefore to pay at least 66 frs. per 100 kilos. for an article which is worth but 30 frs., namely, double its value.

It is interesting to examine the proportion of these 66 frs. which finds its way to the State coffers. Taking the whole consumption of sugar, the average duty actually received by the Treasury during 1899 amounted to 45 frs. 99 c.; in 1900 it was 40 frs. 33 c.; and in 1901, a consumption of 423,576 tons brought in to the Government a sum of 154,827,000 frs., which works out at 36 frs. 50 c. per 100 kilos. It will be seen, therefore, that while the consumer pays 66 frs., the Treasury receives only 36 frs. 50 c., the consumer paying, therefore, 45 per cent. more than the Treasury receives, and this 45 per cent. is imposed for the benefit of private individuals. Instead of contributing to the general expenses (*dépenses*) of the country in the interests of all, they go to swell the profits of a small knot of manufacturers.

In 1901, the tax on sugar showed a deficit (*moins-value*) of 42,233,000 frs.; the bounties were eating up the duty.

When we consider that an unchanging figure of 66 frs. weighs on the price of this commodity (the value of which is but half of this figure), it will be seen that the consumer cannot derive any benefit from any reduction in the market price of sugar. The retailer barely makes a profit, and when selling it at 1 fr. 10 c. the kilo., he considers he is making no profit. The small increase in the consumption of sugar in France since 1884, despite the greater wealth of the country and the higher standard of living generally, is due entirely to the high price of sugar. The actual figures[1] are as follows:—

		Tons.
Expressed in refined in	1885	340,000
"	'99	439,000
"	1900	455,000
"	'01	423,000

an increase of but 6,000 tons a year.[2]

Is it that the French have no desire to eat sugar? The first luxury that a housekeeper allows himself is to take coffee. We produce fruit and sugar; but, though skilful confectioners, instead of working them up, we send these products to England to be made into jam.

The oligarchical character of the sugar bounty system is thus well shown; the consumers as a whole are sacrificed for the benefit of 334 sugar manufacturers, who were able to divide among themselves for the season 1900-01 a sum of 90,436,000 frs., less 2,615,000 frs. beet tax. This gave them a profit of 87,821,000 frs., and to these figures should be added 21,530,000 frs. for bounties and (*détaxes*) for colonial and native sugars, so that the total profit to the manufacturers in round numbers is over 110 million frs.

One argument put forward by the supporters of the bounty system is that it has helped to raise wages of the agricultural labourers, but this assertion is only partially borne out by the official statistics.

The numbers employed were:—

	Men.	Women.	Children.		Men.	Women.	Children.
1884	43,896	6,749	6,080	1899-1900....	42,812	3,426	2,489

and in the following year these figures were again slightly reduced.

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[1] *Note.*—This table gives the total of raw and refined sugar, the whole being expressed in figures of refined.

[2] "Bulletin de Statistique du Ministère des Finances," Mars, 1902, p. 351.

As regards the wages, they were as follows:—

	Men.		Women.		Children.	
	Frs.	c.	Frs.	c.	Frs.	c.
1884-85	3	90	1	92	1	73
'99-1900	3	87	2	06	1	66
1900-01	3	97	2	17	1	65

From this table it will be seen that there has been a slight increase in the wages of men and women, and a decrease in the wages of children, but the numbers employed have decreased, and so the boasted benefits which it is said the bounties have conferred on the agricultural labouring classes have no foundation in fact.

As already stated, they are of advantage only to a few hundred sugar manufacturers, the actual number being 334, and they and a few sugar planters in the French West Indies and in Réunion alone reap the benefit. With the small and restricted electorate (90,000) which existed at the time of the Restoration, it is possible to understand how such class legislation came to be passed, nor is it difficult to comprehend how it was continued and perfected under the succeeding Government of Louis Philippe, when the electorate was still but 200,000. But that such a system should continue to exist and to receive approval in a country enjoying manhood suffrage, can only be explained by the economic ignorance of the majority of Frenchmen.

V.—*The Cartel System in Austria-Hungary.*

In recent years most sugar-producing countries have copied more or less the laws and customs of Austria as regards sugar.

By the law passed on the 21st August, 1888, Austria replaced the bounties on production by bounties on export, which varied from 1 fl. 60 (3·20 crowns) to 2 fl. 30 (4·60 crowns). At the outset the amount of bounties was not to exceed 5 million fls., this amount being afterwards, by the law of 7th July, 1896, raised to 9 million fls. By royal decree dated 17th July, 1899, the bounties were raised to 1 fl. 60 and 2 fl. 30, the limit, however, being 9 million fls. or 18 million crowns as heretofore.

The duty for home consumption, which was fixed in 1888 at 11 fls., was raised in 1896 to 13 fls., and on the 1st August, 1899, to 19 fls. or 38 crowns (39 frs. 90 c.). Products containing sugar are entitled to the bounty in proportion to the amount of sugar they contain. The decree of 1899 settled the customs duty for raw sugar above No. 19 of the Dutch standard and for refined sugars at 11 fls. gold (27 fr. 50 c.).

When the total of the bounties paid on sugar exported from the Austro-Hungarian customs territory during a financial year, which is from 1st August to 31st July of the following year, exceeds a sum of 18 million crowns, the factories in such cases are obliged to repay the surplus, repayment being made by each factory according to the amount of bounty they have received.

In the campaigns prior to 1896-97, when the maximum of bounties that could be paid was 5 million fls., the amount of money thus repaid by the factories was, as regards Austria:—

	Florins.
In 1893-94	4,191,000
„ '94-95	3,609,000
„ '95-96	3,941,000

and for Hungary:—

	Florins.
1893-94	568,000
'94-95	453,000
'95-96	731,000

From this it will be seen that the amount of money returned by the manufacturers was almost equal to the bounty paid to them. It was therefore decided to raise the limits of the bounties to 9 million fls., and under this *régime* the restitutions, as reported to the conference of Brussels, were as follows for Austria:—

	Florins.
1898-99	4,085,000
'99-1900	4,077,000

and for Hungary:—

	Florins.
1898-99	959,900
'99-1900	945,800

The following statistics dealing with the sugar industry in Austria-Hungary are taken from the note submitted to the conference at Brussels by the Austro-Hungarian Government:—

Production.

		Sugar for Consumption.	Raw Sugar.
		Tons.	Tons.
Austria	1898-99	695,827	67,199
	'99-1900	695,092	117,710
Hungary	1898-99	153,938	27,542
	'99-1900	158,956	28,642

Exportation.

		Sugar for Consumption.	Raw Sugar.
		Tons.	Tons.
Austria	1898–99	423,538	112,893
	'99–1900	414,153	104,356
Hungary	1898–99	97,334	27,377
	'99–1900	101,856	29,708

Sugar Consumed in the Country.

		Sugar for Consumption.	Raw Sugar.	Amount of Duty on Consumption.
		Tons.	Tons.	Florins.
Austria	1898–99	286,193	4,811	37,830,611
	'99–1900	267,400	3,073	51,390,079
Hungary	1898–99	57,908	138	7,546,182
	'99–1900	53,270	202	10,159,942

From these it will be seen that Austria exports two-thirds of the sugar which it produces, and we must deduct from the amount of the tax on consumption the sum of 18 million crowns, which is the maximum allowed for the bounty on export.

Under the shelter of the customs *surtaxe* of 27 frs. 50 c. (11 florins gold) the sugar manufacturers and the refiners have organised the cartel on the following plans:—

The Austrian sugar manufacturers have unanimously agreed with the refiners to deliver no sugar for home consumption.

The refiners, on their side, have unanimously agreed to pay to the manufacturers of sugar 15 fls. (30 crowns) per 100 kilos.—that is to say, 31 frs. 50 c. for 88°, for all quantities of raw sugar which are for home consumption.

The total bonus (*bonification*) due to the manufacturers is divided among them according to their mean respective output, calculated for a series of years. It is easy to calculate the profit resulting from the cartel system, and to ascertain its repartition among the refiners and the manufacturers. Taking the price of sugar as quoted at Trieste, we have the value of refined sugar on the international market, and also as it should be in the interior of the country—were there no understanding among the producers to raise it—by adding the tax and the export bounty, which in all countries has the effect of raising by that amount the price to the consumer.

It has been settled that the price of raw sugar should not exceed 15 fls. or 30 crowns, and that the price of refined sugar—which would serve as the basis for the division of the profits—

should not exceed 42 fls. or 84 crowns, and thus all that exceeded 84 crowns belonged solely to the refiners.

The price of raw sugar which serves as a basis for calculation is not the mean of the price for the whole year, but only for the months of November to April.

The sugar for consumption, expressed as refined is (*majoré*) raised 10 per cent. to represent the consumption of a ton of raw sugar; therefore 320,000 tons of refined sugar, at this rate of conversion, stands for 352,000 tons of raw sugar.

With these figures as a basis, I have made a calculation, based on the prices quoted on 1st February, 1902, showing what the direct bounties and the indirect bounties resulting from the cartels give as benefit.

The direct bounties for raw sugar are 3·20 crowns, and for refined 4·60 crowns, with a maximum of 18 million crowns.

The prices of sugar were:—

		Crowns.
At Prague.	Raw sugar	18
	Refined sugar (loaves)	84
„ Trieste.	Crushed „ (*pilé*)	21

Taking in round numbers for 1901-02 a consumption of raw sugar of 400,000 tons or 360,000 tons in refined, and an export of 900,000 tons.

The return to the manufacturers and to the refiners is as follows:—

A. *To the Manufacturers.*

		Crowns.
Cartel.	The normal price is fixed at	30
	„ minimum „	22
	„ difference is the manufacturers' profit	8
	Plus one-tenth	0·80
		8·80

	Crowns.
By multiplying 8 crowns 80 by 360,000 tons we have a sum of	81,680,000
To which should be added four-fifths of the export bounties, namely	14,400,000
Which gives a total of	46,080,000

B. *To the Refiners.*

The sale price at Prague is 84 crowns.

		Crowns.
Without the cartel the price would be equal to that of Trieste, viz.		21
Increased by 1, the bounty on export	4·60	42·60
2, „ home duty	38·0	
		63·60

We have thus—

	Crowns.
Price at Prague	84
From which should be deducted	63·60
Leaving	20·40
Less the manufacturers' bounty	8·80
Leaving for the refiners	11·60
Which multiplied by 360,000 tons, gives	41,760,000
To which should also be added one-fifth of the export bounties	3,600,000
Which gives a total of	45,360,000

The total of the bounties is therefore—

	Crowns.
To the manufacturers	46,080,000
„ refiners	45,360,000
	91,440,000

or at the rate of 7 crowns per 100 kilos. on a production of 1,300,000 tons.

An examination of the above figures will show that the direct bounties on export and the share which is given to the sugar manufacturers under the cartel represents on the total production—

$$\frac{46,080,000}{1,300,000} = 3·55 \text{ crowns per 100 kilos.}$$

The total of the bounties being 7 crowns per 100 kilos., the remainder, that is, 3·45 crowns, is (*prélevée*) taken by the refiners.

From these figures it will be seen that the refiners reap greater advantages from the cartel system than do the sugar manufacturers, the former receiving 41,760,000 crowns, and the latter but 31,680,000. This is owing to the fact that the refiners (*perçoivent*) collect the bounty.

The abolition of bounties and of the surtax (*surtaxe*) would raise the price of sugar, and, supposing that this increase would be 6 crowns per 100 kilos., on a total production, say, of 1,300,000 tons, the factories would receive 78 million crowns instead of 46 million which they receive under the present system.

The great land owners, who were much alarmed at the threat of the abolition of the existing system of bounties, would really benefit by it, because the manufacturers would be obliged to share in a certain measure their profits with the agricultural classes, whereas the refiners keep all the profits for themselves.

The share of the refiners in the cartel system is 42 million crowns. Supposing the surtax (*surtaxe*) were reduced to less than

6 crowns (5·70 crowns) instead of 22 (as at present), this sum would be returned to the consumer, and, besides this, the Austro-Hungarian Treasury would save a yearly sum of 18 million crowns which it now pays in export bounties.

VI.—*The German Cartel System.*

The present system of sugar bounties in Germany is based on the law of 27th May, 1896, the duty on home consumption being 20 marks, whilst the additional customs tax (*surtaxe*) is the same.

There is, besides, a *surtaxe d'impôt* or factory tax fixed at 0·10 mark per 100 kilos. of raw sugar. Further, there is fixed for each factory a certain output called the "contingent," based on the average of several years' production, beyond which the contractor is not allowed to go without paying an additional tax of 2 marks 50 per 100 kilos., which is equal to the export bounty for raw sugar.

The total of the contingents has been fixed at 1,700 million kilos. of raw sugar for the campaign 1896-97, but the figure varies for each campaign, it being increased by double the amount of the increase in home consumption during the two preceding years.

The customs duty for sugars of all kinds is 40 marks, including the duty for home consumption, which is 20 marks.

The export bounties are 2 marks 50, 3 marks 55, and 3 marks per 100 kilos., without any fixed total.

I give below the figures showing the production, exportation, and home consumption of sugar during the last three years:—

	Production in Raw Sugar.	Exportation.		Consumption Expressed in Raw Sugar.
		Raw Sugar.	Refined Sugar.	
	Tons.	Tons.	Tons.	Tons.
1898-99	1,722,429	499,602	456,611	755,898
'99-1900	1,795,478	485,934	438,627	849,064
1900-01	1,979,118	533,270	547,316	773,968

The bounties paid for export in the last three years were:—

	Marks.
1898-99	28,590,000
'99-1900	27,609,000
1900-01	32,673,000

The amounts of the duties and taxes levied (*perçus*), after deducting the export bounties, were in the last three years:—

	Marks.
1898-99	109,233,000
'99-1900	126,724,000
1900-01	115,691,000

The German *cartel* system was established on the 1st June, 1900, and is copied from that of Austria. The additional tax (*surtaxe*) on foreign sugars, which is 20 marks, or 25 frs., allows of the favourable working of the system.

Two syndicates have been formed, one consisting of all manufacturers of raw sugar, and the other of all refiners, makers of white sugar, and manufacturers who extract sugar from molasses. The terms of their agreement are on the following basis:—

The manufacturers undertake to deliver their raw sugar for home consumption only to the establishments of the other syndicate, but *per contra* the refiners guarantee them a price of 12 marks 75 per 50 kilos. (which is strictly equal to the price of 30 crowns stipulated in favour of the Austrian manufacturer), they also undertaking to (*parfaire*) complete the difference. But below 9 marks 35 (which is equal to 8*s.*; at Hamburg on the international market) nothing is counted, with the result that the maximum sum which a manufacturer may receive per bag of sugar consumed in the country is 3 marks 40 per 50 kilos. of refined, or 6 marks 80 + 0·68 = 7 marks 48 per 100 kilos. of raw sugar, for they have accepted the rule that to produce 100 kilos. of refined sugar 110 kilos. of raw sugar are required.

The Austrian *cartel* only takes account of the range of prices of raw sugar during the first six months of the season; but in Germany the bonus is calculated monthly, and is based not only on the course of prices during the month, but also on the quantities issued for consumption by the refineries during this period.

The adherents to the *cartel* system are placed on a basis of mutual distrust. They are obliged in the first place to accept bills guaranteeing the execution of penalties. These consist of enormous fines in the case of any breach of contract, and each manufacturer is subject to the most searching police inspection.

In calculating the profits of the *cartel* at the prices current on the 1st February, 1902, we arrive at the following results:—

		Tons.
Production		2,200,000
Consumption	expressed in raw sugar	770,000
	„ refined sugar	700,000
Exported		1,430,000

of which one-half is refined.

According to the system actually in vogue, the direct bounties for export, and the indirect bounties created by the working of the *cartel* system, give to the manufacturers and the refiners the following profits:—

A. *To the Manufacturer.*

		Marks per 100 Kilos.
Cartel	The normal price is fixed at	25·50
	„ minimum „	18·70
	„ difference is the profit of the manufacturer	6·80
	Plus one-tenth	0·68
		7·48

		Marks.
Which sum 7 marks 48 × 700,000 tons	=	52,360,000
Exported. On 1,430,000 tons at 2 marks 50....	=	35,750,000
		88,110,000

B. *To the Refiners.*

		Marks.	Marks.
Cartel	The quotation (*cote*) for refined sugar (loaves) is		56·40
	The cost of refining, the difference of quality, and the normal profit is estimated at		8· 0
	Difference		48 40
	The price of raw sugar (*Kornzucker*) is quoted at	15·40	42·20
	Bounty guaranteed to manufacturers	6·80	
	Home duty 20 marks per 100 kilos.	20·00	
	Difference		6 20
	The profit of refiners is therefore 6 marks 20 × 700,000 tons		= 43,400,000 marks.

		Marks.	
Export	For 650,000 tons refined at 3 marks 55................................	= 23,075,000	
	There were required 715,000 tons raw at 2 marks 50	= 17,875,000	
	The difference forms the bounty for the refiner, namely		5,200,000 marks.
	Total		48,600,000 marks.

The total amount is therefore—

	Marks.
For the manufacturers	88,110,000
„ refiners	48,600,000
Making a total of........	136,710,000 marks.

It will be seen from the above figures that the direct bounties for export and the portion of the profit which is due (*attribuée*) to the sugar manufacturers belonging to the *cartel*, represents a profit of 4 marks per 100 kilos. of raw sugar produced $\left(\frac{88,110,000}{2,200,000}\right)$.

The total of all the bounties amounts to 136 million marks, or 6·21 marks per 100 kilos.

The price of sugar having fallen very low, and apparently leaving no margin for a further fall, we may say that the abolition of direct bounties for export and the lowering of the additional tax (*surtaxe*) from 20 marks to 5 marks, would have the effect of raising prices in the proportion of the amount of the suppressed bounties.

To prove, however, the advantages which the sugar manufacturers—whose interests are intimately bound up with those of the agricultural class—will derive from the abolition of the bounties, it is not necessary to take so high a rise in price as would be equal to the supposed abolished bounty. Take the figure only of 5 marks per 100 kilos.

This increase (*majoration*) in price will mean to the manufacturer—for the quantity exported as well as for that issued for home consumption, say for a total of 2,200,000 tons—a revenue of 110 million marks, whereas under present circumstances he only receives 85 million, and the higher sum will be received free of all the vexatious restrictions under which he at present suffers, and which are inherent to the *cartel* system or to any syndicate.

On the other hand, the share of 43 million marks taken (*prelevée*) by the refiners, thanks to the surtax of 20 marks, will be returned to the consumer. The (*écart*) margin between raw and refined sugar will again become normal, and the home consumption, in consequence of the lowering of the price, will increase, especially when the Treasury applies the sum which will be available, owing to the abolition of the export bounties, to the reduction of taxation, as the proposed new law will reduce the duty for home consumed sugar from 20 marks to 16 marks.

Finally, the taxpayers will profit by the abolition of the direct bounties on export, which for the year 1900-01 were 32,673,380 marks; and the sugar manufacturer will be largely compensated by the higher price which he will obtain for his products.

Again, the price of refined sugar will no longer be subject to artificial inflation, and the profits of the refiner will be limited by the customs *surtaxe*, which will be reduced from 20 marks to 5 marks, and the margin (*écart*) will again become normal. Finally, the consumer will benefit owing to the lowering of the price of refined sugar to the extent of about 50 million marks.

VII.—*A Decisive Experience.*

Those who organised and those who defend the *cartel* system, when it is attacked are always careful to explain that their object is not to increase production, but to prevent sudden and violent fluctuations in the sugar market. If this be so, the results which they have obtained do not bear out thèir statements. They have increased production, lowered the prices beyond all anticipation, and so limited home consumption that they are obliged to find markets abroad with the help of bounties.

It is nowadays the custom to boast of this policy of making the producing nation pay more dearly for its own products than the foreigner to whom these products are sold. They say that the home consumer is well satisfied with this system which has been established by the German *cartels* and certain American trusts. They assert that by increasing production there is afforded, despite the bounty obtained (*prelevée*) by the *cartels*, the advantage of cheapness in the countries where these systems are in force.

It is not, however, the consumer in Germany, still less the consumer in Austria, and least of all the consumer in France, who has the benefit of cheap sugar, it is the English consumer who has had his sugar at less than cost price.

The consumption of sugar by the latter is almost 42 kilos., whereas in Austria-Hungary the consumption per head is only 8 kilos., two-thirds of the production being exported. It is hard to believe that the Austro-Hungarian consumer sees the advantage of paying in Prague 84 crowns for sugar, which for export is worth 21 crowns at Trieste.

Germany is the greatest producer of sugar, yet its consumption since 1885 has only risen at different periods from a little over 8 kilos. per head to 10 kilos. and 13 kilos., and it is at present only from 15 to 16 kilos. Out of a total production of raw sugar amounting to 1,979,000 tons, 1,196,00c tons, or about 60 per cent., have to be exported.

Holland shows the same proportion; the production in 1899-1900 was 153,000 tons of raw sugar, and in 1900-01 it was 160,489, but the home consumption in those years was but 59,868 and 62,433 tons respectively, that is to say about 38 per cent.

I give below figures which show the singular situation of Belgium in regard to the production and consumption of sugar:—

	Home Production as stated by the Law.	Imported.		Exported.	
		Raw Sugar.	Refined Sugar.	Raw Sugar.	Refined Sugar.
	Tons.	Tons.	Tons.	Tons.	Tons.
1899	254,065	12,101	480	187,859	47,889
1900	303,118	11,841	667	247,998	52,759

One sees from this table that here the export of sugar is almost equal to the production. The home consumption is increased by the output of the factories beyond the amount estimated by the law, this excess output constituting the bounty.

This system of bounties and of *cartels*, despite the formidable opposition of a certain number of those who have reaped its benefits, has been condemned by the Brussels Conference, and even those who approved of it, but could look ahead, foresaw that the present state of affairs could not continue.

M. Licht, the statistician of Magdeburg, estimated, on the 1st September last, that the world's production of beet and cane sugar would amount to 10,295,000 tons. To this should be added stocks amounting to 970,000 tons, making a total of 11,265,000 tons which would weigh on the market until the 1st September, 1902. As the consumption of sugar during the previous season had been but 9,135,000 tons, and even supposing that it be increased owing to its cheapness by 400,000 tons, there would still remain 1,770,000 tons weighing down the market.

Prices have fallen low, but they would have fallen still lower if the Brussels Conference had not stated that there would be a limit to this over-production.

The Conference was successful, because everyone saw the absurdity of a system which forces the production of a commodity, restrains its home consumption, and makes the consumer and taxpayer of the country which produces it, pay in order that the foreigner may condescend to use it.

The sugar-exporting countries which were represented at the Brussels Conference have agreed to abolish all direct and indirect bounties, and to reduce to 6 frs., the (*surtaxes*) additional taxes of 27 frs. 50 c. and 25 frs., under the shelter of which the *cartel* systems of Austria-Hungary and Germany had been established at the expense of their countrymen.

M. de Smet de Naeyer, the Belgian Minister of Finance, who occupied the position of President of the Sugar Conference, stated clearly enough the importance of the work which the Conference had done, nor did he exaggerate when he said that the "convention "is a work of international solidarity based on the most rational "principles of economic science." He was also correct in describing it as a work of peace, for by denouncing the system of bounties, the delegates condemned protection in its least justifiable form, that of aggression.

The success of the Sugar Conference is the most important achievement of economic liberal policy in Europe since the signing of the commercial treaties of 1860.

This is not the place to discuss the question of countervailing duties; the Brussels Conference however could not succeed except on the condition that its resolutions had a sanction, a penal clause, according to the expression of Sir Nevile Lubbock.

But if all Free Traders are not agreed on this point, they ought all to rejoice in its success, at a time when liberal political economy is so much attacked—when even in England writers and statesmen speak of abandoning the system of open competition (*concurrence*) for different forms of State organisation. The knowledge acquired by long experience in different countries, the discussions which have led to the Conference of Brussels, and those to which it has given rise, have shown the complete failure of the system of direct and indirect bounties, as well as of the *cartels* which had been built up under the protection of the customs duties.

It has been a decisive experience, and one which believers in the historical method will in the future be able to quote. Nowhere has this system been established for the benefit of the people as a whole. It has always been for the advantage of a small number of manufacturers and landowners, who troubled themselves less about obtaining a product to be sold at a profit on its cost price, than to receive their bounties.

To sell at a loss and obtain one's profit at the cost of the whole of one's countrymen, is a political industry with large profits for those who are in it, but among other defects it has that of not being able to last for ever. Organisations of this kind give to nations the appearance of wealth, but it is found on examination to be entirely fictitious.

Discussion *on* M. Yves Guyot's Paper.

The President said they had all listened with great interest to this masterly paper by their friend M. Yves Guyot, and he thought they would be agreed, after hearing the results at which he had arrived, that it was indeed wonderful that a system such as that which he had described should have continued to exist and receive approval from so able a people as the French, and in a country which possessed so wide a franchise as France. The same remark might, of course, be made as to other countries in Europe, which had been carrying on a similar system. But while they wondered at what seemed to be the short-sightedness of some foreign countries, they might perhaps look with some advantage nearer home and find, both in our own colonies and even in this country itself, indications of opinions somewhat similar to those which had received so conclusive a condemnation in the paper. The two lessons which he would venture to draw were, in the first place, that they must look not to the immediate effects, but to the ultimate results. Only the other day he was reading a very interesting paper in which the policy adopted in the Australian colonies was spoken of as quite a success because it had, for the moment, succeeded in developing certain industries on an artificial basis. The writer did not appear to perceive that the result he commended could only have been achieved at the expense of other interests, which lost more than was gained by those which were artificially stimulated. The second moral was that in these matters every country must bear its own burdens. If a country chose to pay bounties it must pay them out of its own taxes, and it was impossible to impose the burden upon the shoulders of other countries. Perhaps, however, they would not all share those views, and it was by open discussion that the truth could most successfully be reached, and the full advantage of such a paper as that of M. Guyot be obtained.

Mr. Harold Cox remarked that the whole of this endless trouble over sugar bounties had arisen from the fundamental blunder of approaching economic questions from the point of view of the producer instead of from the point of view of the consumer. The French Government had been so keen to develop the production of sugar, that they had never paused to ask whether there would be a sufficient market for the sugar when it was produced. As soon as the home market was sufficiently supplied, they had been driven by the logic of their policy to artificially encourage the export of sugar in order that it might find a market abroad, thus taxing their own people in order that foreigners might have the advantage of buying French sugar below cost price. If, on the other hand, the problem had been approached from the point of view of the consumer, no such absurd position could have arisen, for the consumer was, and must be for all time, the keystone of the economic arch. It was he that gave the order, and when the order had been given it was certain that the goods would speedily be produced. In other words, if the State took care of the consumer, it would be quite certain that the consumer would take care of the producer. It might, of course, happen that foreign competition, or the appearance of a new invention, or the abandonment of an old fashion, would lead to temporary and possibly serious loss to particular groups of producers, but their loss would be more than made good by the gain of other producers. For example, we might lose our sugar-refining industry. But that was a loss which would take place, not only because of foreign competition, but also because of the progress of invention. But if British sugar refiners were thrown out of work by the importation of French refined sugar, other British industries would be brought into work in order to produce the goods which must be exported to pay for the imported sugar. At the same time the British consumer, by getting his sugar cheaper than he could get it before, would be in a position to enlarge his expenditure upon other commodities, and therefore to give additional employment to other producers. At the same time it was desirable that, wherever possible, steps should be taken to mitigate the injury done to particular producers, whether that injury arose from foreign importations or new inventions or changes of fashion. Generally speaking, it was very difficult for the State to provide such mitigation without doing more harm than good, but in the isolated case of the West Indian sugar producers the problem was comparatively simple. The gain arising to this country from foreign sugar bounties was estimated at 6 or 7 million £ a year. Since last year there had been a tax on sugar which had intercepted over 5 million £ of this gain, which would otherwise have gone to the British consumer, and had transferred it to the Exchequer, to that extent relieving the general taxpayer. On the other hand, owing to the bounty system, West Indian producers were compelled to sell their sugar at a lower price than they could otherwise have obtained. On the small amount of sugar they produced the loss involved was certainly not more than 500,000*l.* We could indirectly compensate them for that loss by a grant to the West Indian colonies that were most depressed—the money to be used in the relief of taxation. This would involve no artificial encouragement of any particular industry, and would ease the loss of the West Indies while still leaving the British taxpayer 4,500,000*l.* better off than he would be if sugar bounties were abolished.

Sir NEVILE LUBBOCK, K.C.M.G., said he had not come there with any idea that he would himself have to answer the arguments of the Cobden Club, but, before dealing with them, he would say that they owed a great deal to M. Guyot for the very clear manner in which he had laid before them the details of an exceedingly intricate subject. Anyone wishing to understand the intricacies of the subject could not do better than take that paper home and study it. Such a one would then learn a good deal with regard to one of the most remarkable systems of legislation that had ever been known to the world. As M. Guyot had pointed out, the object of foreign governments seemed to have been on the one hand to do everything they could to stimulate production, and on the other to do everything they could to prevent their own people deriving any benefit from that production.

To Mr. Harold Cox the consumer was everything. He was "the keystone of the arch." But what was an arch without a foundation? The keystone was not the whole arch, nor did, he ventured to say, the whole population of the country consist only of consumers. There was no instance of a population which consisted wholly of consumers, and he did not hesitate to say that if ever such an instance did arise, that country would not last very long. It was evident that people must subsist by production as well as by consumption, and if they absolutely ignored the producers they would do their country a great wrong, and themselves a great harm. He freely admitted that the consumer must not be lost sight of, but what the real Free Traders who existed before the Cobden Club—such men as John Stuart Mill, Ricardo, James Mill, McCulloch, Bentham and others—maintained was that the proper course was perfect justice to all, and that there should be equality of conditions and equality of the terms of competition for all. There should be no artificial interference with the natural conditions of production. They argued that if producers and workers were left to themselves they would undertake that which made their labour most advantageous to the community, and that interference to promote some particular industry by means of a subsidy prevented that labour from being employed in the most advantageous manner, and thus caused the community to lose some of the advantage of their labour. They ought then to aim at perfect justice to all; there should be no artificial advantage given to one producer over another. Indeed in this country they would not tolerate such a thing as to permit one man to have protection against his neighbour. But if it was wrong as between one Englishman and another Englishman, surely it must be wrong to allow Frenchmen, Germans, or Austrians to be protected in our English markets against our own countrymen. Again, Mr. Cox argued that because foreign countries sent us goods at less than cost price, we ought to jump at the opportunity. But did he think these goods were sent to us out of charity and philanthropy? He must know that the object these people had in view was to purchase our industries, and to make it impossible for us to go on competing. It was the old story of the coach which carried its passengers for nothing to run the competing coaches off the road. And when it achieved its purpose, it put up its rates. There could be no question that the original idea of the bounties was merely to stimulate the growth of a young industry. But, as Mr. Harold Cox had truly said, as soon as that industry had provided for the whole consumption of the country, they had to go further afield to seek markets. To obtain them they must undersell the sugar, which already supplied those markets, and a government subsidy was the easiest means of enabling them to do so. The subsidy which the French were receiving on their export was about 4*l.* a ton, and the Germans and the Austrians were receiving about 5*l.* a ton. As the sugar itself was worth about 6*l.* per ton, it followed that they were receiving a subsidy of 70, 80, or 90 per cent. on the present value of the sugar. They heard a great deal about technical education. He wondered how much technical education would be needed to enable them to compete against a subsidy of 80 per cent. For his own part, he had a firm belief in the old ideas of Free Trade, and he had no belief whatever in the modern ideas of the Cobden Club; the two things were entirely different. The Cobden Club had absolutely abandoned Free Trade and started a theory—a doctrine which was entirely their own, a doctrine which so far had not found acceptance by one single eminent economist or eminent man at all. Therefore he did not think that Mr. Harold Cox was justified in going about and endeavouring to make it appear to the public that what the Cobden Club was teaching was the old doctrine of Free Trade.

Sir ROBERT GIFFEN, K.C.B., remarked that M. Guyot's views and opinions were entitled to the greatest amount of consideration in an audience like that present. While eminent generally as a politician and statesman on the continent, he had especially done a great deal to promote the cause of Free Trade, and the continuance and growth of friendly relations between this country and France. In the present paper he had stated very clearly the nature of the entanglements and difficulties which foreign countries had got themselves into by engaging in this system of sugar bounties, and they were all glad to think that, partly in consequence of M. Guyot's exertions, they were now on the eve of seeing them abolished. The system had been highly injurious to the people on the continent, and in every way it had disorganised industry. In spite of certain temporary advantages which the sugar bounties had conferred on the countries importing sugar, these bounties were on the whole a cause of great injury and mischief. Many years ago, when the question first arose, he (Sir R. Giffen) gave evidence before the Sugar Committee of 1879 from very much the point of view which Mr. Harold Cox had spoken that night, but he was not sure that he would have taken the same line if he had been able to look forward a quarter of a century and see what the result was to be of allowing these bounties to continue. People became wiser as time went on, and a good many of the assumptions which it was perhaps legitimate to make a quarter of a century ago had been falsified by events. The idea then was—and it was a very natural idea—that bounties were a passing phenomenon, and that they would break down of their own weight. Therefore they might be treated somewhat lightly. If he might say so also, in the presence of Mr. Martineau, he thought the argument of the sugar producers and refiners at that time was a great deal overstated, and that their case was not altogether proved up to the hilt. But however that might be, having had a quarter of a century's more experience, he was satisfied that these bounties must be treated as a great infraction of Free Trade, and that all the countries affected by them were quite entitled to take exceptional measures to put an end to them. Many questions could be raised as to the suitability of the proposed countervailing duties for the purpose of putting an end to the bounties, but no question could be raised against a measure such as had now been settled by the Brussels Convention. He hoped the United Kingdom would not stand out against that Convention. Whatever we might gain temporarily in consequence of what foreign countries gave us by these bounties, they were not to be endured, and we should join in this general movement in favour of Free Trade. He thought that M. Guyot had rendered a great amount of service to the cause of Free Trade by promoting the abolition of the bounties, and, whatever might be their theoretical opinions as to the wisdom of countervailing duties, they should not let theories weigh against a general measure of this kind which had been adopted by a great many countries, and which would probably have the effect of putting an end once for all to this protectionist system of bounties. He thought besides that Mr. Harold Cox was altogether wrong in what he said about the consumer being the first interest to be studied in these matters. If there were no producers there would be no consumers, and, in fact, with few exceptions, all the members of a community were producers as well as consumers. Justice and equity must be considered, and the position of the producer must always be looked at as well as that of the consumer.

Mr. GEORGE MARTINEAU was glad to have the opportunity of thanking M. Yves Guyot very heartily, not only for the paper but also for the great assistance he had rendered at this critical moment in obtaining the abolition of the bounties. He believed it was more than anything else due to the energetic action of M. Yves Guyot that the Brussels Conference had been a success, and therefore he for one begged most heartily to thank M. Guyot for the great services he had rendered to the cause.

Mr. W. P. B. SHEPHEARD said he believed he was the very first to bring the development of the new form of aggressive protection by means of export bounties to the notice of the press in this country. He was present when Sir Robert Giffen gave evidence before the Select Committee in 1879, and he felt it a great pleasure to hear his open recantation of the views he then held. In that recantation he particularly rejoiced, for he felt that by it the position of Free Traders who favoured active measures against export bounties was so much strengthened that there seemed very little more to say by way of discussion.

Sir ALFRED E. BATEMAN, K.C.M.G., after thanking M. Guyot for the paper, called attention to the fact that in previous conferences on the continent, notably in 1887 and 1888, there had been no question of *cartels*. It was true that M. Pistorius, the able representative of Holland, raised the question as to why protective duties were able to act as a bounty on the surplus production. His view was not very well received by the conference, and little came of it; but they had now for the first time a declaration by this conference that we and other countries might endeavour to get import protective duties abolished when it appeared that they acted in this way, and assisted the export by artificially raising the price of what was consumed at home and thus lowering the price of the surplus production which was exported. This suggested the possible extention of the principle to other articles than sugar. It was common knowledge that by the action of various trusts on the continent, and especially in America, articles were exported at a lower price than that at which they could be distributed in the country where they were produced. The conference had affirmed the principle of international action in such cases, and it was one which in future years might have more far-reaching effects than were now contemplated in the general question of the conference. He would add that, whether they thought with the Cobden Club or with the opposite camp, they must all be impressed with the skill with which these sugar bounty negotiations had been conducted by the negotiators, amongst them Sir Henry Primrose and Sir Nevile Lubbock, who had contributed by their skill to an arrangement which bade fair to be carried out within the next year and a half.

Mr. E. W. BRABROOK, C.B. (who had taken the Chair which had been vacated by the President), said he might now close this most interesting and instructive discussion. It was in one respect a memorable one, because it had elicited a declaration of great importance from Sir Robert Giffen. In asking the Society to return its very sincere thanks to their distinguished colleague, M. Guyot, for this paper, he might say that he did not recollect an instance in which so abstruse a subject had been so clearly and so briefly explained. The author described the complicated system which prevailed in many countries on the continent. The instructive conclusions which he had drawn had, he felt confident, been accepted by the majority of the Fellows, for the discussion had ranged about other subjects rather than on the points referred to by M. Guyot.

A hearty vote of thanks to M. Guyot for his paper was then proposed by the Chairman, and carried unanimously.

A Study of Some Portions of the Census of London for 1901.

By T. A. Welton, F.C.A.

[Read before the Royal Statistical Society, 17th June, 1902. The Right Hon. Lord Avebury, P.C., F.R.S., D.C.L., LL.D., President, in the Chair.]

The general lines on which I think the occupations of the people should be classified are not unknown to the Society; but their most recent exposition was in two papers read before the Manchester Statistical Society in 1898.

I should be sorry to convey the impression that in my view the rough method I have used is at all perfect, but I consider it rather as a matter of necessity. We surely want to know, with reference to any urban district, whether it is an old trading centre like Chester, a purely manufacturing town such as Burnley, a seaport like Liverpool, a residential watering place like Southport, or a mining village like Rhondda. Where we can compare entire towns one with another, my method approximately shows, by reference to the primary occupations, what is the general character of the town, and if we then calculate the proportions of the secondary occupations, they indicate whether the inhabitants enjoy a good measure of well-being or the reverse, and whether any peculiarities resulting from local usages are noticeable; for instance, in an early paper on this subject I could distinguish counties where great numbers of people made their own bread from others where this duty was performed by bakers, and where consequently greater numbers of secondary workers were needful in order to attain equal comfort.

The present essay shows my method at its worst and at its best. At its worst, because we have here, even in the aggregate, no complete town, and in the several boroughs we have frequently striking contrasts rather than proper material for comparisons. The ratios of secondary workers cannot in such cases be regarded as measuring the local degree of well-being, since so many persons reside in one borough and work in another. But yet it is seen at its best from another point of view, because, with all its faults, this is the only way to evolve something like order out of the chaos of secondary occupations in London. Many features are brought to light which admit of explanation, and we gradually gain a dim insight into the distribution of trades which is decidedly worth having. Any careful thinker will thus realise, for instance, how worthless is the death-rate of such a place as London City as an indication of healthfulness, and how many things have to be considered before it is possible to depict the industrial and social organisation of either of the twenty-nine boroughs. By attaining some knowledge of what is normal under different social conditions, we pave the way for local investigations, and my whole work is really preliminary to attempting a task which would require more space than this Society could be expected to afford.

The publication of the Census Volume for the county of London offers a tempting opportunity for the study of the occupations of the inhabitants of the Metropolitan boroughs. Previous censuses (except that for 1851) give no such fund of information on the subject.

In dealing with a metropolitan census, it is necessary to keep in mind that a large proportion of those whose daily life is passed in the cities of London and Westminster, and in the intervening borough of Holborn, reside, and are therefore counted in the remoter districts; it has also to be remembered that a large number of persons of independent means reside in certain boroughs, and their wants partially determine the occupations of the inhabitants of those boroughs.

On the other hand, there are a number of boroughs in which industrial pursuits occupy a large percentage of the inhabitants, and where the mercantile and the wealthy unoccupied classes do not tend to reside.

One of the features of my method of treatment of these statistics, is the endeavour to approximately separate the primary from the secondary occupations, the latter being those which are common in a greater or less measure to all English populations, and the former including those engaged in manufactures, commerce, mining and agriculture, with such numbers of tailors, shoemakers, cabinet makers, &c., as represent a manufacturing element in excess of local wants, and similarly any numbers of persons drawn together by special circumstances in excess of what is ordinary.

Thus classified, it will be found that London boroughs can be divided into four categories, including, besides the three already mentioned, certain boroughs which adjoin the central ones, and are rather of a mixed character, viz., Finsbury, St. Pancras, and Southwark. In the west, St. Marylebone and Chelsea have also special characteristics, but it has not been deemed necessary to separate them from the other western boroughs partly inhabited by a wealthy class.

First, as to the indications of the residence of the mercantile and wealthy classes; these are partly direct and partly inferential, the latter being such as denote luxury or expenditure.

	Living on Own Means.	Retired.	Merchants and Clerks.	Unclassified.*	Domestic Service.	Coachman, Cabman, &c. (not Domestic).	Law, Medicine, and Divinity.	Art, Music, and Drama.
I.								
London City........	1·5	0·6	9·0	44·9	41·2	0·5	2·6	1·0
Holborn	6·4	2·1	8·5	58·4	25·9	2·9	3·8	5·3
Westminster........	7·9	1·7	6·6	61·9	58·3	2·7	3·1	3·2
II.								
Southwark	1·9	2·9	5·3	65·6	13·3	2·7	1·0	1·8
Finsbury	1·4	0·9	4·4	60·3	14·6	3·4	1·0	1·3
St. Pancras	4·7	3·1	7·5	72·6	21·0	3·7	2·1	2·9
III.								
St. Marylebone....	9·3	4·4	6·4	75·2	53·2	4·7	4·0	3·6
Chelsea	9·6	10·3	6·2	93·1	58·8	5·4	2·5	3·9
Kensington	16·8	5·0	8·0	103·3	80·3	4·7	4·9	3·9
Paddington	12·6	3·2	9·0	91·8	50·1	5·3	3·9	2·8
Hampstead	13·3	3·7	16·0	111·1	75·7	2·6	5·4	4·9
Hammersmith	9·1	1·7	9·4	84·4	20·9	2·2	2·0	3·8
Fulham	7·9	2·6	8·2	89·5	22·2	3·4	1·9	3·7
Battersea	4·6	1·6	8·5	81·4	15·7	1·5	1·8	2·5
Wandsworth	9·1	5·6	13·0	104·1	35·8	1·6	3·2	3·0
Lambeth	6·4	3·2	11·1	85·2	21·4	2·5	2·0	3·8
Camberwell	5·1	3·8	12·6	87·1	17·9	2·2	1·9	1·9
Lewisham	9·3	4·6	16·6	105·1	36·2	1·3	2·7	2·6
Hackney	5·1	3·7	13·0	82·9	19·8	1·4	2·0	1·7
Stoke Newington	9·6	3·4	20·2	96·2	26·9	1·3	2·8	2·7
Islington	5·8	3·2	10·2	79·2	18·4	3·2	1·9	2·1
IV.								
Shoreditch	0·9	4·6	3·1	63·2	11·6	1·8	0·6	0·7
Bethnal Green ...	1·2	3·8	2·8	63·2	10·2	1·2	0·5	0·5
Stepney	1·2	2·2	4·2	62·9	11·6	1·0	0·7	0·7
Poplar	1·7	3·8	4·9	73·0	9·6	0·9	0·7	0·6
Bermondsey	1·4	2·5	5·4	69·2	10·5	1·0	0·7	0·5
Deptford	4·5	1·9	9·8	83·6	16·6	0·8	1·2	1·9
Greenwich	3·8	3·9	5·1	82·8	23·0	0·9	1·3	1·2
Woolwich	2·4	2·4	2·4	73·7	12·4	0·5	0·7	0·8

* Excluding persons under 15 years of age.

The above figures are all per hundred "working" males,[1] and, save the merchants, clerks, coachmen, and practitioners (law, medicine, and divinity) are for the two sexes combined.

For reasons connected with the dearness, and at the same time the undesirability of a city residence, all the numbers for the residential classes in London City, except that of merchants and clerks, are low. The borough of Holborn is more residential, and

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[1] This standard is the one which I have used throughout the paper, in relation to occupations, wherever ratios are given, unless the contrary is specified.

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seems attractive for lawyers and artists; those "living on their "own means" in that borough are probably to a great extent temporary residents only. Somewhat similar observations apply to the great City of Westminster, but there the residential part of the population seems to be more wealthy, and professional persons are less strongly attracted.

I am inclined to believe that amongst populations made up of ordinary families to a great extent, the ratio of "unclassified" persons, that is to say, apparently idle people, would not sink below 79·2 per cent., the figure for Islington, composed of 6·2 men and 73·0 women aged 15 years and upwards. The lower ratios noticed in the central districts, including St. Marylebone, are probably owing to the numbers of isolated individuals or incomplete families who gravitate there, usually belonging to the active part of the population.

Southwark and Finsbury are unattractive as residences, and the low ratios of servants indicate poverty amongst the inhabitants. It will be found that Finsbury has a considerable industrial population; in fact, when measuring the industrial element in metropolitan boroughs, it will be expedient to exclude the mercantile sub-class and the "Defence" class, and we shall then find a very striking variety of ratios of "primary" workers in different parts of the county.

St. Pancras is a borough the statistics of which would be more intelligible if it were subdivided. Its southern border might approximate to Holborn as a seat of artists and professional men; northwards it would more resemble Islington.

St. Marylebone and Chelsea have something in common with Westminster, but have much larger proportions of settled families of more or less wealth. Yet the proportions of domestics and the "unclassified" suggest that family life is not nearly developed in these two boroughs as it is in Kensington and Hampstead, Wandsworth and Lewisham.

The remaining boroughs in this (third) category may be arranged in the following order, if we regard them as residential places:—

	Residential Persons.	Domestics.	As 100 to		Residential Persons.	Domestics.	As 100 to
Stoke Newington	33·2	26·9	81	Camberwell	21·5	17·9	83
Hampstead	33·0	75·7	229	Lambeth	20·7	21·4	103
Lewisham	30·5	36·2	119	Hammersmith...	20·2	20·9	103
Kensington	29·8	80·3	270	Fulham	18·7	22·2	119
Wandsworth	27·7	35·8	129	Islington	18·7	18·4	98
Paddington	24·8	50·1	202	Battersea	14·7	15·7	107
Hackney	21·8	19·8	91				

Naturally, there would be a great difference between the means of those residents who are respectively classed as "living on their "own means," "retired," and "merchants, clerks, &c.," and many of the domestics would be in the service of members of the respective communities other than residential persons; yet I think we may fairly infer that Kensington, Hampstead, and Paddington must contain the most wealthy families, Camberwell and Stoke Newington many of those which are least wealthy. In Battersea a comparatively wealthy district is included, otherwise its ratio would be amongst the lowest. The boroughs with the highest ratios of domestics also show the highest proportions of unoccupied persons, principally, of course, women.

It will be difficult to draw any clear inference from the numbers of persons who are apparently idle, because this class may include many wealthy people, and possibly almost as many who are not valuable members of society. To each thousand working males there are, of unoccupied males aged 25—65 not described as having means:—

20 in Holborn.
19 „ Westminster.
17 in Kensington.
15 „ Chelsea.
But only 6 in Bethnal Green.

The numbers of women returned as unoccupied are, of course, much larger, but most of these are wives: thus—

Age.	Married.	Unmarried.	Per Cent. on Working Males.	
			Married.	Unmarried.
25—35	239,195	31,117	17·1	2·2
35—45	197,674	13,027	14·1	0·9
45—55	134,649	6,769	9 6	0·5
55—65	79,382	4,219	5·7	0 3
	650,900	55,132	46·5	3·9

The numbers of unoccupied women between the above ages therefore average 50·4 to every 100 "working males." In districts swarming with young families in fair circumstances, like Hampstead, Lewisham, and Wandsworth, this ratio rises to 64·2, 63·8, and 62·6 per cent. respectively; in places where the ordinary family life is rare, most residents being attracted by business or pleasure, and single visitors numerous, such as London, Holborn, and Westminster, the ratios fall to 27·8, 34·6, and 37·4 respectively. In the poorer industrial boroughs, such as Shoreditch, Stepney, Finsbury, and Bethnal Green, we meet with such ratios as 42·4, 42·8, 43·3, and 43·5 respectively.[2]

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[2] See the appended Tables III and IV, which latter shows that the distribution of aged unoccupied women is somewhat different.

The class of domestic servants includes two sections which mark the existence of a wealthy class, viz., male "in-door" and male "out-door" servants, the latter chiefly coachmen and gardeners. These may serve to test our conclusions as to which are the boroughs which most largely attract the wealthier classes:—

	Male Servants.			Male Servants.	
	In-door.	Out-door.		In-door.	Out-door.
Westminster	8·1	3·5	Camberwell	0·3	0·5
Chelsea	6·4	2·7	Stoke Newington	0·2	0·4
Kensington	4·3	3·1	Battersea	0·4	0·2
St. Marylebone	4·2	2·9	Woolwich	0·1	0·5
Paddington	2·8	2·1	Islington	0·2	0·3
Hampstead	1·3	3·1	Finsbury	0·3	0·1
Wandsworth	0·6	2·2	Southwark	0·3	0·1
Lewisham	0·4	1·9	Hackney	0·1	0·2
London City	1·8	0·1	Deptford	0·1	0·2
Fulham	0·9	0·6	Shoreditch	0·2	—
Holborn	1·0	0·2	Bethnal Green	0·1	0·1
St. Pancras	0·7	0·4	Poplar	0·1	0·1
Lambeth	0·4	0·6	Bermondsey	0·1	—
Hammersmith	0·5	0·4	Stepney	0·1	—
Greenwich	0·3	0·6			

In the City of London and in Holborn most of the male servants are neither coachmen, gardeners, nor footmen, but are caretakers.

We may now, I think, safely draw a line dividing the boroughs in the third category into—

(*a*) St. Marylebone, Chelsea, Kensington, Paddington, Hampstead, Fulham,[3] Wandsworth, and Lewisham.

(*b*) Hammersmith, Battersea, Lambeth, Camberwell, Stoke Newington, Islington, and Hackney.

Of the eight boroughs in the fourth category, Greenwich and Deptford appear to contain the greatest proportions of inhabitants in comfortable circumstances, whilst Woolwich, as a military place (with 5,083 soldiers and sailors), has a special character. The ordinary civil inhabitants of Woolwich do not seem to rise much above the average of the remaining boroughs in this category, which are mainly industrial. The figures just given as to unoccupied females in these boroughs appear to me to suggest the existence of a well-defined standard of living, below which the least favoured borough does not materially descend.

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[3] This borough seems nearly on the medium line between (*a*) and (*b*).

Primary Classes.

In describing the principal occupations of a primary character which characterise the metropolitan boroughs, I think it necessary to deal separately with the mercantile class, who to a great extent choose their own residences, and with the military and naval class, of whom exactly the reverse may be said. The boroughs are now arranged under categories as before, dividing the third into two sections:—

	Per Cent. on Working Males.			Per Cent. on Working Males.	
	Commerce.	Defence.		Commerce.	Defence.
I.			III (*b*).		
London City	19·3*	0·4	Hammersmith	10·7	0·4
Holborn	9·7	0·3	Battersea	9·5	0·6
Westminster	7·3	7·2	Lambeth	12·8	0·4
			Camberwell	14·4	0·4
II.			Hackney	14·8	0·2
Southwark	5·8	0·3	Stoke Newington	23·7	0·2
Finsbury	4·9	0·4	Islington	11·7	0·3
St. Pancras	8·4	1·0			
III (*a*).			IV.		
St. Marylebone	7·4	1·0	Shoreditch	3·3	0·2
Chelsea	6·9	1·5	Bethnal Green	3·0	0·2
Kensington	9·5	2·5	Stepney	4·6	0·6
Paddington	10·4	1·0	Poplar	5·3	0·2
Hampstead	19·1	0·5	Bermondsey	5·8	0·2
Fulham	9·5	0·7	Deptford	11·1	0·4
Wandsworth	15·8	0·5	Greenwich	6·1	6·4
Lewisham	20·6	0·7	Woolwich	2·8	12·5

* Including the estimated number of drapers (wholesale) in the city.

The remaining "primary" classes, so far as concerns London, may be divided conveniently under the following heads:—

Metal workers, engine and machine makers, instrument and apparatus makers.

Merchant service, dock labourers, shipwrights, &c.

Manufacturers (other than metallic).

Railway servants (where specially numerous).

Hotel keepers and servants (where specially numerous).

Indefinite and other primary occupations.

	Proportion of Males Employed to 100 Working Males.					
	Sailors, Dock Labourers, &c.	Metal Workers.	Other Manufactures.	Railway Men.*	Hotel Service.*	Others.
I.						
London City	3·0	2·0	4·4	—	6·6	1·2
Holborn	0·6	4·6	10·3	—	3·5	1·2
Westminster	0·6	2·8	5·7	—	5·3	1·0
II.						
Southwark	2·4	7·0	14·2	—	—	1·5
Finsbury	0·7	10·6	16·7	—	0·2	1·8
St. Pancras	0·3	4·9	11·4	4·1	0·8	1·5
III(*a*).						
St. Marylebone	0·3	3·2	6·3	—	1·3	1·0
Chelsea	0·6	3·3	2·3	—	—	1·3
Kensington	0·4	2·6	2·7	0·3	—	1·3
Paddington	0·5	3·1	3·5	4·1	—	1·0
Hampstead	0·3	3·2	3·5	0·4	—	2·0
Fulham	0·4	4·4	3·4	0·8	—	1·7
Wandsworth	0·8	4·4	4·3	0·6	—	2·3
Lewisham	0·8	3·9	3·5	0·7	—	3·3
III(*b*).						
Hammersmith	0·7	5·3	4·6	2·0	—	1·8
Battersea	1·1	7·0	6·6	4·1	—	2·0
Lambeth	0·9	5·8	7·6	1·2	0·1	1·8
Camberwell	1·1	5·3	10·8	—	—	1·6
Hackney	0·8	4·6	17·2	—	—	1·5
Stoke Newington	0·4	4·5	10·0	—	—	1·1
Islington	0·3	7·3	10·6	1·9	—	1·4
IV.						
Shoreditch	1·0	6·3	29·2	—	0·1	1·8
Bethnal Green	2·5	4·0	34·2	—	—	1·3
Stepney	10·3	3·4	26·0	—	0·1	1·3
Poplar	16·3	11·1	8·0	1·4	—	2·5
Bermondsey	14·6	5·4	14·9	0·3	—	2·1
Deptford	6·0	11·8	6·0	4·3	—	2·5
Greenwich	7·5	15·7	3·3	—	—	5·0
Woolwich	2·1	19·1	5·5	—	—	9·9

* The numbers represent the estimated excess beyond a full local quota.—The column "Hotel Service" includes barmen and lodging house keepers where these are in great excess.

This table shows that as respects primary occupations, very great diversity exists as between different boroughs. "Factory "workers" (undescribed otherwise) are seen to be remarkably numerous in Woolwich and Greenwich. The high ratio for

Lewisham in the last column is due to the numbers of gardeners and florists (not servants) found there.

The principal industries classed as "other manufactures" shall now be shown:—

	Stepney.	Bethnal Green.	Shoreditch.	Finsbury.	Hackney.	Stoke Newington.
*Tailor	10,713	398	146	—	—	—
*Boot, shoemaker	3,677	2,041	867	—	1,736	—
*Hat, umbrella, &c., maker	1,025	255	456	190	150	—
Silk manufacture	21	253	40	19	35	16
Hemp "	400	121	100	18	129	7
Artificial flower manufacture	7	15	58	36	39	14
Tanner, currier, &c.	977	297	511	405	608	147
*Hair, feathers, worker	108	283	122	90	265	—
Indiarubber, waterproof, soap, oil, &c., workers	296	119	104	90	290	40
*Upholsterer	—	247	226	—	61	10
*Cabinet maker	1,765	3,595	2,333	227	1,621	167
*French polisher	80	861	966	160	328	—
Printer, lithographer	1,556	1,279	1,581	2,010	2,333	589
Bookbinder	293	307	441	548	551	97
*Musical instrument maker	—	32	84	53	497	115
Glass, pottery, &c., workers	205	296	417	296	532	58
Chemicals, workers in	177	95	80	66	347	30
*Food, workers in	670	124	27	—	34	—
Brewers, distillers, &c.	473	207	121	136	81	17
*Tobacco manufacture	1,172	167	—	—	—	—
*Sawyer, packing case maker, &c.	1,055	2,013	1,650	480	762	—

* In this and similar tables an asterisk denotes that *the excess* of workers beyond what is deemed a full local quota is shown. The figures are the absolute numbers of persons employed, it being thought unnecessary to compute ratios in these cases. Table VII will enable readers to calculate such ratios if desired.

It will be noticed that the chief of the miscellaneous industries shown in the above table are tailoring and shoemaking in Stepney; cabinet making with shoemaking in Bethnal Green and Shoreditch; printing in Finsbury; whilst in Hackney we find the trades of Bethnal Green and Shoreditch in a lesser measure. Stoke Newington is hardly reached by those trades. The silk manufacture, once important, has almost disappeared.

	South-wark.	Holborn.	West-minster.	Ber-mondsey.	Deptford.	Poplar.
Printer, lithographer	4,647	1,002	921	1,243	722	722
Bookbinder	643	146	110	172	92	120
*Paper manufacture, &c.	320	164	—	—	—	—
Hemp manufacture	125	6	10	127	31	269
Chemicals, workers in	153	44	62	103	102	474
Indiarubber, waterproof, soap, oil workers	162	27	33	213	148	460
*Sawyer, packing case maker, &c.	472	—	—	422	184	768
*Tailor	—	246	1,668	—	—	—
Tanner, currier, &c.	911	103	198	2,736	287	172
*Hair and feathers, worker	348	—	—	88	—	33
Glass, pottery, &c., worker	336	129	85	66	116	175
Brewer, distiller, &c	252	135	269	228	61	126
*Food, worker in	397	—	—	556	113	327

It will be noticed that the leather manufacture still holds its ground in Bermondsey.

	St. Pancras.	Islington.	St. Mary-lebone.	Lambeth.	Camber-well.	Battersea.
*Musical instrument maker	1,963	1,366	43	119	—	118
Printer, lithographer	2,234	4,016	512	3,701	3,812	1,148
Bookbinder	272	828	41	406	543	116
*Paper manufacture, &c.	57	418	—	353	324	59
Chemicals, workers in	183	220	43	135	187	210
Indiarubber, waterproof, soap, candle, oil, workers	88	228	32	227	177	413
*Sawyer, packing case maker, &c.	260	209	—	—	608	134
*Tailor	438	—	1,067	—	—	48
Artificial flower maker	17	84	2	10	7	1
Tanner, currier, &c.	261	835	122	276	971	163
*Hair and feathers, worker	—	121	—	—	113	—
Glass, pottery, &c., worker	247	413	82	1,090	269	279
*Cabinet maker	941	737	121	—	—	—
*French polisher	843	341	77	—	—	—
*Upholsterer	186	—	—	—	—	—
*Food, workers in	—	209	—	—	300	253
Brewers, distillers, &c.	179	197	59	288	168	117
Coach, cycle, motor manufacture	308	374	125	216	243	182

In Woolwich 1,677 men working in explosives and matches, also deserve notice, but in the rest of the boroughs there are few noticeable industries which fall into this class.

Metal workers include watchmakers, of whom a small number still linger in Clerkenwell (borough of Finsbury) and Islington; goldsmiths and silversmiths in the same two boroughs showing an excess above the ordinary of 1,300 men; and electrical apparatus makers numbering—

1,143 men in	Greenwich,	1,036 men in	Islington,
641 „	Woolwich,	714 „	St. Pancras,

and lower ratios elsewhere, in all 11,665 men. Engineering is largely developed at Woolwich, Greenwich, Deptford, Poplar, Battersea, and Southwark.

In dealing with the primary occupations of females, we may confine ourselves to three items, viz., the mercantile class (chiefly clerks), the hotel, &c., service, and manufactures not metallic. The other sub-divisions are small enough to be passed over without notice.

	Proportion of Women Employed to 100 Working Males.				Proportion of Women Employed to 100 Working Males.		
	Manufactures, not Metallic.	Hotel Service.*	Commerce.		Manufactures, not Metallic.	Hotel Service.*	Commerce.
I.				III (*b*).			
London City	4·1	10·1	1·6	Hammersmith	10·0	—	1·8
Holborn	6·1	5·3	2·0	Battersea	6·0	—	1·7
Westminster	5·6	5·2	1·5	Lambeth	4·7	—	1·9
				Camberwell	7·8	—	1·9
II.				Hackney	13·0	—	2·0
Southwark	11·2	0·3	0·9	Stoke Newington	7·7	—	3·0
Finsbury	17·8	0·1	0·9	Islington	8·9	—	2·0
St. Pancras	6·7	0·4	1 6				
III (*a*).				IV.			
St. Marylebone	11·5	0·7	1·6	Shoreditch	24·2	—	0·4
Chelsea	6·7	—	1·7	Bethnal Green	26·6	—	0·3
Kensington	9·2	1·0	1·6	Stepney	16·0	—	0·5
Paddington	6·6	0·4	2·0	Poplar	11·2	—	0·6
Hampstead	2·2	—	2·5	Bermondsey	12·9	—	0·7
Fulham	6·4	—	1·5	Deptford	2·4	—	1·5
Wandsworth	3·4	—	1·9	Greenwich	1·0	—	0·7
Lewisham	2·4	—	2·0	Woolwich	0·5	—	0·5

* These numbers represent the estimated excess beyond a full local quota.

The principal details will now be given (as in the case of male primary workers) with respect to the primary occupations of women comprehended in the first column of the above table.

	Stepney.	Bethnal Green.	Shoreditch.	Finsbury.	Hackney.	Stoke Newington.
*Tailor	7,807	1,666	540	120	462	55
*Boot, shoemaker	335	1,498	683	—	1,178	—
*Milliner	—	—	291	90	505	183
*Dressmaker	—	—	—	—	490	262
*Shirt maker, seamstress	611	538	1,151	564	1,627	195
*Hat, umbrella maker	512	386	287	91	54	—
*Laundry, washing service	—	—	168	—	252	—
Artificial flower manufacture	49	146	498	410	166	29
Silk manufacture	44	387	57	61	60	8
Fancy goods, &c., manufacture	351	698	494	339	563	81
Hemp manufacture	704	126	165	39	66	6
Furrier, currier, &c.	457	212	454	346	385	80
*Hair, feathers, worker	384	819	472	350	429	26
*Upholsterer	—	128	73	—	—	—
*French polisher	—	384	236	130	27	—
Paper box, bag maker	669	1,714	1,839	1,140	594	43
Envelope, stationery manufacture	239	359	469	406	323	34
Bookbinder	526	478	617	1,157	471	71
*Food, workers in	552	44	19	—	225	—
*Tobacco manufacture	1,678	512	178	123	—	—

	Southwark.	Holborn.	Westminster.	Bermondsey.	Deptford.	Poplar.
*Tailor	397	260	1,365	—	—	1,638
*Dressmaker	—	—	1,418	—	—	—
*Shirtmaker, seamstress	807	—	—	1,328	311	591
*Boot, shoemaker	236	—	—	—	—	122
*Hat, umbrella maker	49	—	—	228	—	—
Fancy goods, &c., manufacture	274	94	172	125	56	113
Hemp manufacture	145	5	3	278	16	319
Furrier, currier, &c.	520	32	52	566	60	57
*Hair, feathers, worker	250	7	—	155	—	110
Paper box, bag maker	797	90	32	274	36	441
Envelope, stationery manufacture	657	73	104	303	56	77
Printer, lithographer	427	77	60	208	43	54
Bookbinder	1,784	443	247	675	103	163
*Food, workers in	466	—	—	848	—	979
*Tobacco manufacture	250	62	—	—	—	—
Indiarubber, waterproof, soap, &c., workers	49	17	4	130	25	449
Lucifer match, cartridge manufacture	21	7	1	6	4	595
*Paper manufacture, &c.	167	39	—	25	—	—

	St. Pancras.	Islington.	St. Mary-bone.	Lambeth.	Camber-well.	Battersea.
*Tailor	122	—	738	—	—	86
*Milliner	—	715	170	—	—	—
*Dressmaker	2,141	1,552	3,186	1,042	260	817
*Shirtmaker, seamstress	—	980	—	—	1,850	—
*Laundry, washing service	—	605	—	884	1,615	1,165
Fancy goods, &c., manufacture	401	738	177	262	259	252
Artificial flower manufacture	114	555	32	55	22	19
Curriers, furriers, &c.	113	612	25	122	179	25
*Hair, feathers, worker	32	396	—	10	32	—
*Upholsterer	568	—	90	—	—	—
Bookbinder	399	1,112	86	841	733	100
Paper box, bag, maker	254	669	10	316	158	284
Envelope, stationery manufacture	390	472	56	319	255	104
Lucifer match, cartridge manufacture	167	239	2	12	4	7

The following occupations in the remaining boroughs are noticeable :—

Dress-makers	2,247 in Paddington.	Laundry, washing service	2,531 in Kensington.
	1,295 „ Kensington.		2,248 „ Hammersmith.
	1,174 „ Chelsea.		1,355 „ Fulham.
	901 „ Hammersmith.		1,105 „ Wandsworth.
	1,017 „ Fulham.		367 „ Lewisham.

In each case the numbers given represent the excess beyond a full local quota.

Secondary Occupations.

The proportion of male secondary workers to the entire number of male workers was, in the county of London, 61·4 per cent. in 1891. I find the proportion in 1901, after excluding as primary a few persons in trades not so counted in my earlier calculation, works out slightly less, viz., 60·3 per cent. The situation, in fact, is but little changed. In Table VI (annexed) I transcribe a few figures from my Manchester paper, contrasting them with similar figures from the same source for three metropolitan counties, and one which is fairly remote from London; the object being to show how far the composition of the secondary classes (males) may be expected to vary. I also insert corresponding figures for London, as in 1901, which indicate an increase in the trades supplying food, in the Government (local and general) service, and in the service of road and railway traffic.

The position in each borough (per 100 working males) was as under in 1901:—[4]

	Secondary.		Primary.	
	Males.	Females.	Males.	Females.
I.				
London City..	60·9	46·7	37·0	16·0
Holborn	63·4	43·2	30·2	14·4
Westminster	66·6	60·2	29·9	13·1
II.				
Southwark	61·5	27·7	31·2	13·4
Finsbury........	60·4	29·3	35·1	20·7
St. Pancras	64·1	36·5	32·3	9·7
III (*a*).				
St. Marylebone........	75·0	66·9	20·4	14·1
Chelsea	77·9	67·5	15·8	8·6
Kensington....	75·3	90·7	19·2	12·1
Paddington....	73·2	63·2	23·6	9·3
Hampstead....	68·3	91·1	29·0	4·9
Fulham	73·6	33·7	20·8	8·1
Wandsworth	66·4	47·7	28·6	5·5
Lewisham ...	61·6	49·3	33·4	4·5
III (*b*).				
Hammersmith.	66·9	35·2	25·6	12·2
Battersea	62·9	29·4	30·9	8·2
Lambeth	64·3	37·9	30·6	7·1
Camberwell	62·6	34·6	33·5	10·1
Hackney	57·3	38·1	39·1	15·7
Stoke Newington	58·1	45·2	39·9	11·1
Islington	62·5	35·8	33·5	12·1
IV.				
Shoreditch	53·0	26·2	41·9	26·1
Bethnal Green	50·0	24·6	45·3	27·9
Stepney............	46·9	24·5	46·3	17·2
Poplar	44·1	23·0	44·8	12·8
Bermondsey	47·8	23·4	43·3	16·0
Deptford	50·9	32·5	42·1	4·8
Greenwich	43·7	33·8	44·0	2·2
Woolwich........	37·8	23·0	51·9	1·4

Woolwich, at the bottom of the scale, ranks with Swansea, Halifax, Wigan, and Warrington in respect of its proportion of secondary workers.[5] Poplar and Greenwich are nearly level with Leeds and Cardiff. Stepney and Bermondsey would rank in this respect above Portsmouth and Newcastle-on-Tyne, but I really think somewhat greater numbers of their inhabitants should have been transferred to the "primary" classes, thus reducing the apparent ratios of secondary workers, which would be further diminished if those who not serve the local populations could be excluded.

One of the characteristics of secondary occupations is, that unless some unusual cause is in operation all the sections rise or fall together. We have, therefore, an interest in studying their *relative* magnitudes, especially when dealing with parts of a great whole like London, because of the likelihood that their irregularities may be significant of the various functions of the several parts:—

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[4] The ratios of males (secondary and primary) do not amount to 100, because there are some occupations (general labourers, &c.) so indefinite that they are not counted in either class. See the proportionate numbers of such persons in Table I.

[5] The ratio would, however, be raised from 37·8 to 43·2 if the military, &c., were not counted as "working males;" their demands on local services cannot but be small.

	To every 100 *Males* of the Secondary Classes there are engaged upon									
	Food, &c.		Dress.		Domestics.		Building. Males.	Railway Carriage. Males.	Road Carriage. Males.	Messengers, &c. Males.
	Males.	Females.	Males.	Females.	Males.	Females.				
I.										
London City	13·9	5·5	12·1	11·4	18·1	49·6	4·7	1·1	3·4	17·7
Holborn	14·6	8·0	8·2	12·1	7·7	33·0	10·3	0·8	10·0	9·9
Westminster	13·1	5·2	7·7	13·6	25·3	62·3	9·2	0·9	8·1	7·5
II.										
Southwark	14·3	4·8	9·2	13·8	3·7	18·0	16·3	2·6	16·3	10·5
Finsbury	14·3	5·2	8·3	13·4	3·7	20·6	14·2	2·4	18·0	12·8
St. Pancras	13·9	5·5	8·1	13·1	4·9	28·0	18·0	3·1	15·4	8·1
III (*a*).										
St. Marylebone	12·8	4·9	10·4	14·5	13·0	57·9	15·1	2·0	12·3	7·7
Chelsea	13·0	3·7	7·4	10·9	14·4	61·0	20·5	0·7	12·3	7·0
Kensington	12·8	4·5	6·5	10·2	12·6	94·0	17·7	2·8	12·8	5·8
Paddington	13·2	4·9	8·3	11·4	8·9	59·6	18·8	2·8	14·9	5·8
Hampstead	14·4	3·8	8·8	10·2	8·0	102·8	16·2	3·0	9·5	4·0
Fulham	13·6	3·0	6·5	8·7	4·3	25·8	26·0	2·7	13·4	6·1
Wandsworth	13·6	3·0	7·7	10·1	6·1	47·7	23·2	3·1	8·6	4·4
Lewisham	15·6	3·1	9·0	11·0	5·1	53·7	22·9	3·3	7·0	4·4
III (*b*).										
Hammersmith	13·6	3·6	8·1	10·4	3·0	28·3	26·5	3·0	11·2	5·1
Battersea	12·5	3·3	7·8	12·4	3·1	21·9	25·9	3·1	9·1	6·7
Lambeth	15·0	4·6	7·6	14·0	4·2	29·1	19·0	3·1	12·7	6·7
Camberwell........	14·8	4·4	9·2	15·2	3·1	25·5	20·8	3·2	12·2	7·2
Hackney	15·3	4·8	11·9	16·8	2·6	31·9	18·3	3·1	10·1	7·5
StokeNewington	15·9	4·4	12·3	16·4	2·6	43·8	18·3	1·8	7·5	5·9
Islington	13·9	4·6	8·9	15·3	2·6	26·9	18·9	3·1	15·8	7·1
IV.										
Shoreditch	14·4	5·2	10·3	15·6	2·9	19·1	15·7	1·6	16·6	12·7
Bethnal Green	15·9	5·0	9·9	14·9	2·4	18·1	14·3	2·9	18·7	11·2
Stepney	17·8	5·7	11·1	15·3	2·8	21·9	13·0	1·9	16·3	9·6
Poplar	15·5	5·9	8·4	16·5	2·1	20·1	18·6	4·4	13·1	8·5
Bermondsey	16·9	6·2	7·1	14·6	2·4	19·4	13·7	4·0	17·4	12·0
Deptford	16·4	5·0	8·0	15·5	2·0	30·8	20·0	3·9	9·9	6·6
Greenwich	15·1	3·9	5·8	13·2	5·1	47·5	20·3	3·5	8·9	6·0
Woolwich	14·0	4·3	7·4	17·0	3·0	30·0	24·5	2·4	6·7	4·3

In the tables numbered I and II appended, the ratios are given per 100 male "workers," and thus we have before us the absolute as well as the relative numbers of these classes.

One of the first conclusions we derive from a study of these figures is a conviction that the same reasons which deter the merely "residential" class from living in London City, operate to exclude many other persons. The building trades, and those engaged in road and railway traffic, avoid the central boroughs, especially London City. The male servants there are mostly caretakers, and in the class of warehousemen, messengers, &c., are

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included many messengers and porters, often in charge of premises. Those engaged about local and general government, including Post Office and Inland Revenue and Customs officers, also rise to a high percentage. We have seen that the primary classes include wholesale drapers, commercial clerks, and hotel proprietors and servants. Ordinary family life is comparatively rare.

The trades concerned in providing food and lodging employ in the City almost a medium proportion of males, and more than that proportion of females. The proportions in Westminster are slightly higher, and in Holborn they exceed the average, with a specially great number of women. Those supplying dress in the City of London include a high ratio of men, but comparatively few women. In Westminster the proportion of men supplying dress is moderate, and that of women high. In St. Marylebone both sexes are engaged in unusually high proportions in providing dress, notwithstanding the numbers transferred to the primary classes in that borough. I am inclined to believe that in St. Marylebone, Paddington, Southwark,[6] and elsewhere many drapers reside, so as to be near their work, whilst many others, more free to choose their places of residence, find their way to Islington, Stoke Newington, Hackney, Hampstead, Lewisham, Wandsworth, Camberwell, and Hammersmith. These and other tradespeople who live at a distance from their work do not really serve the districts where they reside, and might properly (if it were possible) be left out of account as secondary workers there.

The fact that I have in many cases transferred to the primary classes portions of the tailors, shoemakers, dressmakers, &c., after reserving a full quota for local service, would tend to diminish the value of the figures for secondary workers shown in Tables I and II. In some striking instances, such as Hackney, Shoreditch, and Stepney, the true numbers serving local demands may be much lower than those estimated. Yet we are safe in saying that besides St. Marylebone, Chelsea and Paddington present high proportions of both sexes in this class, and Lambeth a full proportion of women, some of whom may spend their days in Westminster workrooms. St. Pancras as usual occupies a middle place.

The boroughs where the supply of dress engages fewest hands are Bethnal Green, Bermondsey, Poplar, Deptford, Greenwich, Woolwich, Battersea, and Fulham. The figures are also low in some of the best residential districts, such as Kensington, Hampstead, Wandsworth, and Lewisham.

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[6] This borough offers a cheap place of residence for many people who work in London City.

Returning to the dealers in food, &c., we find the absolute proportions are high in Chelsea, Kensington, Paddington, and St. Marylebone, also in Fulham and Lambeth. It is less easy to see why the proportions, especially of male workers, are rather high in Hampstead and Lewisham.

Perhaps the more scattered populations on the outskirts require a greater number of persons to maintain their supply than are needed in denser-peopled neighbourhoods; but more probably the residential boroughs may attract tradesmen from a distance.[7]

The places where the absolute proportions of food suppliers are lowest are Woolwich, Greenwich, Deptford, Poplar, Stepney, Bermondsey, Bethnal Green, Shoreditch, and Battersea. But *relatively* to the whole number of the secondary classes this class stands fairly high in those boroughs, as might be expected when it is considered that it supplies the most urgent necessities. The range is from 12·5 males, 3·3 females per 100 "male secondary "workers" in Battersea, to 17·8 males, 5·7 females in Stepney, comparable with 12·8 males and 4·5 females in Kensington, 13·1 males and 5·2 females in Westminster.

The ratios of domestic servants are shown in the tables. Kensington, Chelsea, Westminster, St. Marylebone, Paddington, and Hampstead are best provided; whilst the ratios in Poplar, Bermondsey, Stepney, Bethnal Green, Shoreditch, and Southwark are at the bottom of the scale, and show a remarkable approach to uniformity. Finsbury shows nearly as low a ratio, and so would Battersea but for the influence of its wealthy corner. The absolute ratio in Woolwich is low.

The building trades reach their highest dimensions in Fulham, Hammersmith, Battersea, Wandsworth, Lewisham, and Chelsea, Paddington and Kensington ranking next. It is evident that the Fulham, Hammersmith, and Battersea men go elsewhere to work, but Wandsworth and Lewisham are fast advancing in population, and may give employment to all those within their bounds. The other places mentioned have need of many decorators, and these probably do service also in Westminster, where, as in London City and Holborn, the ratio is low. St. Marylebone shows a medium figure.

The places where this class falls to a minimum are (excluding the above) Stepney, Bermondsey, Bethnal Green, Poplar, Shoreditch, Finsbury, Greenwich, and Woolwich. It seems curious that higher proportions are not found in some of these boroughs, considering their nearness to London City, where work certainly has to be done by men from outside.

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[7] It is beyond a doubt that many tradesmen reside some miles away from their place of business. Were it possible, it would be right to exclude these from the reckoning of secondary workers in the boroughs where they reside.

Little need be said about those railway servants who are found in boroughs not affected by termini or workshops, and I will only remark that some of those who have been transferred to the primary class may really be "residential" in the sense of having chosen to live in Hampstead, Lewisham, and Islington, at some distance from their work. The numbers found in London City, Westminster, Holborn, and Chelsea are extremely low.

"Road Carriage." This class includes persons engaged in passenger and goods traffic. The central boroughs—London City, Westminster, and Holborn—show moderate or low figures; but Finsbury, Southwark, St. Pancras, Chelsea, and Marylebone show higher ratios, and even Bethnal Green, Shoreditch, and Bermondsey may be largely influenced by the demand in the City. There remain, amongst the highest ratios, Paddington, Fulham, Islington, and Kensington, and even Lambeth, where doubtless many reside who work between those places and more central districts. This class falls to a minimum in the more remote places, such as Woolwich, Greenwich, Lewisham, Stoke Newington, and Deptford.

Messengers, porters, and watchmen (with whom are conjoined comparatively small numbers of other other persons employed as warehousemen, telegraph and telephone workers, and coal labourers) figure largely in the City, as already mentioned. They are also numerous in other boroughs near the centre, such as Finsbury, Shoreditch, Southwark, and Holborn, whence it may be they repair to the City during the day. The class is least numerous in remote places such as Woolwich, Greenwich, Hampstead, and Lewisham.

The Class XI (*e*) described as "Sundry shopkeepers," embraces chemists, stationers, booksellers, newsagents, oil and colour men, furniture dealers, ironmongers, goldsmiths, and tobacconists, with a few others. It falls very low in London City, Westminster, and Chelsea, and is also low in Kensington. But it is lowest in Woolwich, Greenwich, Poplar, Bermondsey, Stepney, and Deptford. Those engaged in these trades seem to a very considerable extent to be "residential," *i.e.*, they choose to reside at a distance from their work, at Stoke Newington, Hampstead, Hackney, &c. But in Holborn, Shoreditch, and Finsbury, where residential attractions are not conspicuous, many are found who probably work to some extent in London City. St. Pancras and Islington, boroughs which include residential areas, show full proportions.

The Class XI (*f* and *g*[8]) includes the gas, water and other services (electric, sanitary), also road labourers, railway contractors' labourers, blacksmiths, &c. It takes in brush and broom makers, coopers, carvers and gilders, and sundry workers in wood. It were to be desired that supplementary tables had been furnished in respect of grouped trades, such as that of carvers and gilders, as I think it very desirable to separate shopkeepers from others engaged in industries.

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[8] I have used the same symbols as in my Manchester paper, though the correspondence is not quite perfect.

In some respects the distribution of this section of the population resembles that of the section last referred to. In London City, Westminster, Chelsea, and St. Marylebone its dimensions are small. But instead of being "residential," it also falls very low in Stoke Newington, Hampstead, Hackney, St. Pancras, and Islington, and rises to a maximum in such places as Greenwich, Battersea, Poplar, Fulham, Deptford, and Camberwell, where gas workers are numerous, also in Woolwich, where there are many smiths. Oddly enough, it rises to rather more than average numbers in Holborn, but that is not due to the elements "carver "and gilder," and "house and shop fittings maker;" the excess there is entirely amongst navvies and paviors or road labourers.

We have now run through the class of tradesmen, and may come to that of professional people. And first, as to "Law, "Medicine, and Divinity."

Of those who choose to reside at a distance from the centre, many are found in the boroughs of Hampstead and Wandsworth. Those who favour the western parts are most numerous in Kensington, St. Marylebone, and Paddington. Holborn and Westminster also show high ratios. Then come some more suburbs, such as Stoke Newington and Lewisham. In London City and Chelsea, though male workers are fewer, there are numerous women acting as sick nurses who fall into this class.

The other end of the scale is occupied by Bethnal Green, Shoreditch, Stepney, Bermondsey, Poplar, Woolwich, Finsbury, and Southwark.

The second division of professional people is that of "Education, "Literature, and the Arts," and here, to a certain extent, is a greater necessity to live near the place of work; yet surprising numbers are found in Hampstead and Wandsworth, which boroughs again show the highest ratios, except Holborn, which ranks between them. This borough is exceptionally situated, affording a fairly cheap residence for those who must work in the City, in Westminster, or in St. Marylebone. After Wandsworth, we have the suburban or semi-suburban boroughs—Hammersmith, Lewisham, Lambeth, and Fulham—and the richer boroughs of Kensington and Chelsea.

At the bottom of the scale we find Shoreditch, Bethnal Green, Bermondsey, Poplar, Stepney, Woolwich, and Finsbury. Of these, Woolwich is best provided, having more women "teachers" than the other places.

General and Local Government. Besides London City (already referred to) this class reaches a comparatively important number in Westminster, Chelsea, and Woolwich. It is found that some who can select their residences live in Wandsworth, Stoke Newington, Islington, Lambeth, and even Battersea. The lowest proportions (of males) are in Shoreditch, Bethnal Green, Stepney, and Poplar.

Ages and Civil Condition.

The extreme diversity which exists in the matter of occupations between the inhabitants of the several metropolitan boroughs, reflects itself in the ages and also the civil condition of their people. If in the section devoted to birth-places we had a table showing for each borough the number of inhabitants of each sex born in London, and the numbers of each sex born in the following places, viz.:—

	Enumerated in 1901.	
	Males.	Females.
Divisions III and IV (Middlesex, Herts, Essex, &c.)	186,949	242,640
Division II (Kent, Surrey, &c.)	142,747	179,244
,, V (Devon, Somerset, &c.)	65,280	85,488
Elsewhere in England and Wales	139,883	159,841
British subjects born elsewhere	85,913	96,599
Foreigners	79,804	55,573
	700,576	819,385

the proportions of strangers in each borough would be full of interest, and the table would occupy but two pages.[9] Very full information is given as respects the foreigners.

Turning to the civil condition of the population of the county of London, in combination with the census of ages, we find the following variations on the whole in the ten years between 1891 and 1901, viz.:—

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[9] It is also highly desirable that tables giving *the ages* of the total immigrants of each sex in each of the first five categories should be given. We could then compute with confidence the numbers and ages of immigrants from each quarter in intercensal periods.

Civil Condition and Age.		Numbers.		To 100 Married Women Aged 15—65.	
		1891.	1901.	1891.	1901.
Married women	15—65	691,234	766,659	100·0	100·0
,, men	15—65	667,753	736,390	96·6	96·1
,, women	65 and upwards	23,631	26,438	3·4	3·4
,, men	65 ,,	37,847	40,973	5·5	5·3
Single women	15—35	517,361	585,181	74·8	76·3
	35—45	51,699	66,012	7·5	8·6
	45 and upwards	59,816	70,745	8·7	9·2
,, men	15—35	471,024	527,797	68·1	68·8
	35—45	37,039	48,054	5·4	6·3
	45 and upwards	31,088	40,773	4·5	5·3
Widows	All ages	186,479	197,517	27·0	25·8
Widowers	,,	64,565	72,128	9·3	9·4
Children	0—15	1,372,207	1,357,874	198·5	177·1
		4,211,743	4,536,541	609·3	591·7

This table shows there were in 1891 100 wives aged 15—65 amongst 410·8 persons aged 15 and upwards, but in 1901 the same number amongst 414·6 persons of like age. The change, being less than 1 per cent., betokens great stability in this ratio. I have based the calculation on the number of wives rather than that of husbands, although both ratios are well maintained, because for business reasons or otherwise husbands more often than wives are absent from home.

The proportions of single women have become perceptibly higher, also those of single men above 35 years of age.[10] There is a material decline in the proportion of widows.

The great fact, however, which dwarfs all others, is a decline in the proportionate number of children under 15 years of age, from 198·5 to 177·1 per 100 wives. This means a difference of about 164,000 children, which would, had they been counted, have raised the number to about 1,522,000, and converted an actual decline in numbers into a considerable increase.

We are not in possession of the National Census of Ages for 1901; but turning to the previous census, we obtain the following table for England and Wales:—

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[10] A reason is given later on for this change.

In 1891.		Numbers.	To 100 Married Women Aged 15—65.
Married women	15—65	4,672,635	100·0
„ men	15—65	4,493,390	96·2
„ women	65 and upward	244,014	5·2
„ men	65 „	358,158	7·7
Single women	15—35	3,183,701	68·1
	35—45	282,449	6·0
	45 and upwards	342,072	7·3
„ men	15—35	3,180,006	68·1
	35—45	238,227	5·1
	45 and upwards	228,338	4·9
Widows	All ages	1,124,310	24·1
Widowers	„	484,990	10·4
Children	0—15	10,172,235	217·7
		29,002,525	620·7

From this table it appears that 100 wives to 403 persons aged 15 years and upwards was in 1891 the national average, wives being thus in London a little fewer than the average. As respects children under 15, the national proportion was materially higher in England and Wales than in London, at all events in 1891, and this makes the falling off just mentioned seem the more abnormal.

The facts mentioned have induced me to consider whether the fertility of marriages may not have greatly decreased, a solution of the phenomenon which appeared to me to be feasible, having regard to the circumstance that since about the year 1885 articles have been exposed for sale in chemists' shops for use in preventing conceptions.

It appears that the London birth-rate has considerably decreased of late years, not because of any material reduction in the proportion of adult persons in the married state, but in consequence of diminished fertility, thus:—

	Wives 15—45 Years of Age.	Births.		Ratio per 100 Wives.	
		Total.	Legitimate.	Total.	Legitimate.
1880	—	133,310	128,137	28·3	27·2
'81	469,544	132,904	127,716		
'90	—	128,161	123,259	25·9	25·0
'91	506,192	134,484	129,697		
1900	—	130,868	—	23·6	—
'01	*354,125	130,889	—		

* Excluding South Hornsey, added 1st April, 1901.

The mean number of births in the ten years 1881-90 was 132,917, the ratio to the mean number of wives under 45 being

27·2 per 100. In 1891-1900 it was 132,943, the similar ratio being 25·1 per 100.

In the former period the mean ratio was 1·1 per 100 below the commencing figure, and the descent in the ten years 2·4 per 100. These facts are consistent with the idea that the initial figure 28·3 per 100 approximately represents what is natural in such a place as London, and that all decline below this ratio indicates a changed condition of things.

In the second period of ten years the mean ratio was only 0·8 per 100 below the commencing figure, but the total decline was nearly as great, namely, 2·3 per 100.

It follows that we have gradually reached a condition of things when (the ratio of births having sunk from 28·3 to 23·6 per 100) the natural births are reduced by artificial means to the extent of 26,000 per annum, or say 500 weekly.

The national figures, exclusive of London, shall next be shown, the only fact not ascertained being the number of wives aged 15—45 at the date of the last census. This figure has been supplied upon the assumption that persons of this class in England and Wales have increased as rapidly since 1891 as the mass of population, viz., at the rate of 12·17 per cent. Should it prove (as is most likely) that the children under 15 have considerably fallen off in relative numbers, the increase of wives is likely to have been at a higher rate.

	Wives 15—45 Years of Age.	Births.		Ratio per 100 Wives.	
		Total.	Legitimate.	Total.	Legitimate.
1880............	—	748,333	710,964	30·3	28·8
'81............	2,473,612	750,738	712,806		
'90............	—	741,776	708,266	27·8	26·6
'91............	2,737,340	779,673	745,679		
1900............	—	795,286	—	25·8	—
'01............	3,084,143	795,381	—		

The mean number of births in the ten years 1881-90 was 756,117, the ratio to the mean number of wives under 45 being 29·0 per 100. In 1891-1900, it was 782,774, and the ratio 26·9 per 100.

Here again we have some reason to suppose the commencing ratio 30·3 per 100 wives to represent the ordinary fertility of women, having regard to English customs, especially recollecting that the average must be affected by the very high birth-rates in certain important districts where coal-mining is the principal industry.

The mean ratio in the ten years 1881-90, was 1·3 per 100 below the commencing ratio, and the end of the decade marked a total decline of 2·5 per 100.

In the next decade the mean ratio was 0·9 per 100 below the commencing figure, and the final ratio showed a fall of 2·0 per 100 in the ten years, being perceptibly less than in London.

The total decline in the ten divisions outside London was 4·5 per 100, being slightly less than in London. This may be consistent with a decline having occurred in some important centres even greater than that observed in London, whilst in other outside districts the ratio of decline may have been smaller. It is impossible in this place to carry the investigation further without losing sight of the main object of this paper, but local changes in the county of London may properly claim our notice. For the purpose of tracing these the ratios of legitimate births should be used. Many illegitimate children are born in hospitals, far from the mother's proper home, but the same cannot be said of legitimate children.

In this inquiry we are compelled to group together those boroughs which are coupled in one Registration District, viz., Wandsworth with Battersea, Deptford with Greenwich, Fulham with Hammersmith, and Finsbury with Holborn. In the case of Finsbury, its population is so much greater than that of Holborn as to make the ratios represent most closely the condition of the former borough. The changes of boundary which occurred in April, 1901, are ignored, and a slight correction is accordingly introduced in the numbers of births in the last three quarters of 1901.

The boroughs showing the most numerous births to 100 mothers are the industrial ones, where luxury and forethought are comparatively unknown. The *highest* ratios of legitimate births shown in 1880-81 and in 1890-91 were as under:—

	1880-81.		1890-91.
Bethnal Green	30·7	Stepney	29·4
Bermondsey	30·0	Bethnal Green	29·3
Poplar	29·5	Bermondsey	28·5
Stepney	29·3	Poplar	28·1
Greenwich and Deptford	28·8	Finsbury and Holborn	*26·9
Shoreditch	28·6	Shoreditch	26·8

* This figure would doubtless be higher, if Holborn could be eliminated.

The *lowest* ratios shown in 1880-81 and 1890-91 were as under:—

	1880-81.		1890-91.
St. Pancras[11]	25·4	Islington	23·6
Hampstead	25·3	St. Marylebone	23·5
St. Marylebone	24·7	Lewisham	23·1
Kensington	24·3	St. Pancras	23·0
Paddington		Chelsea	22·7
London City	23·3	Hampstead	21·7
Westminster	22·7	Kensington	21·5
		Paddington	21·5
		London City	21·2
		Westminster	20·1

It is not difficult to understand why the births which take place in London City or in Westminster are few in number. The populations of those cities are in a considerable measure fluctuating and transitory. It may also be the case that many mothers in Kensington, Paddington, St. Marylebone, and Chelsea, prefer to be in the country at the date of their confinement. What surprises me much is that the ratios in these boroughs, already low in 1880-81, have fallen considerably since that time. It will assist us in comprehending the movement if we here note the boroughs where the decline in the ratio has been most important:—

	1880-81.	1890-91.	Decline.		1880-81.	1890-91.	Decline.
Lewisham[11]	27·2	23·1	4·1	Wandsworth and Battersea	27·5	24·4	3·1
Chelsea	26·6	22·7	3·9	Greenwich and Deptford	28·8	25·8	3·0
Hammersmith and Fulham	27·9	24·0	3·9	Camberwell	28·1	25·1	3·0
Hampstead	25·3	21·7	3·6	Kensington	24·3	21·5	2·8
Hackney	28·3	24·8	3·5	Paddington		21·5	2·8
Islington	26·9	23·6	3·3	Westminster	22·7	20·1	2·6

The above-named boroughs are many of them residential, *i.e.*, places to which city clerks and tradesmen from the central boroughs gravitate. Chelsea hardly comes under this description, but might be expected to approximate more closely to Kensington. However, a part of the district since detached (Kensal Town) is included in the above calculation, and might account for the decline being so large.

I have to regret the absence of statistics as to the civil condition of the inhabitants of sub-districts. It is in vain for the

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[11] These tables show ratios of *legitimate* births. In Table VIII all the facts given are collected for purposes of comparison.

Registrar-General to furnish annually elaborate statistics as to these divisions, unless the decennial census gives us some means of reducing such recorded facts into ratios. I venture to suggest that a table giving for each sub-district the thirteen facts contained in the table on p. 468 (or rather fourteen facts, since wives aged 15—45 and 45—65 should be separately shown) would not be bulky, and would have great value. By the use of such a table it would be found, I am sure, that in the borough of Lambeth such wards as Brixton, Tulse Hill, and Norwood resemble Wandsworth borough in their conditions, but the other Lambeth wards approximate more closely to those of Southwark.

The only borough in which children under 15 are a little more numerous than in 1891 is Stepney, where alone the average fertility in 1891-1900 was higher than in the preceding decade. Children fell off least in the following boroughs in the interval 1891-1901:—

	1891.	1901.	Decline.		1891.	1901.	Decline.
Shoreditch	204·1	196·1	8·0	Holborn and Finsbury	189·6	174·0	15·6
Bethnal Green	224·0	214·3	9·7	St. Pancras	180·5	163·8	16·7
Southwark	195·9	185·1	10·8	St. Marylebone	164·6	146·9	17·7
Bermondsey	218·2	203·5	11·7				
Poplar	218·0	204·3	13·7				

They fell off to a much greater extent in the following boroughs:—

	1891.	1901.	Decline.		1891.	1901.	Decline.
Hampstead	195·3	154·4	40·9	Camberwell	218·6	188·5	30·1
Lewisham	211·6	175·1	36·5	Islington	194·1	166·2	27·9
Wandsworth and Battersea	211·0	176·5	34·5	Fulham and Hammersmith	203·0	176·0	27·0
Chelsea	187·1	154·8	32·3	Deptford and Greenwich	218·2	191·2	27·0
London City	184·8	153·0	31·8				

For the ten years 1891-1901 I can only show the further decline, locally, in the fertility of marriages by a comparison of figures including illegitimate births, but when the Registrar-General's annual volumes for 1900 and 1901 appear this difficulty can be remedied. In the meanwhile I exclude St. Marylebone (containing Queen Charlotte's Lying-in Hospital) from my consideration, because of the great number of illegimate births there, and I find in the other boroughs the following changes:—

The highest ratios of total births were, in 1900-01—

Stepney	29·5	Holborn and Finsbury	27·1
Bethnal Green	28·3	Southwark	25·2
Poplar	28·2	Greenwich and Deptford	24·4
Bermondsey	27·3	Lambeth	24·3
Shoreditch	27·2		

and the lowest were—

London City	16·4	Chelsea	20·6
Westminster	17·4	Lewisham	20·8
Hampstead	18·3	St. Pancras	21·5
Kensington	20·1	Wandsworth and Battersea	21·6
Paddington	20·3	Islington	21·7

and the places showing the largest diminutions in the ratios were—

London City, decrease	5·2	Wandsworth and Battersea, decrease	3·6
Woolwich	4·4	Chelsea	3·3
Hampstead	3·9	Lewisham	3·3
Westminster	3·6	Camberwell	3·1

whilst those in which the ratio was not diminished very much were—

Holborn and Finsbury, decrease	0·4	Shoreditch, decrease	0·5
Poplar	0·4	Stepney	0·5
		Southwark	1·0

We find therefore that the industrial boroughs still exhibit the highest ratios of births, and the central districts divide with the residential ones the list of lowest ratios; that the decline (save a sudden descent at Woolwich) has hardly been accelerated, and in some boroughs is very small, especially in the industrial ones.

Returning to the subject of the apparent short return of about 164,000 children under 15 in the last London census, we may, I think, conclude that fully 100,000 of these are non-existent, owing to the falling off in births, but we are entitled, I imagine, to suppose the remainder to be represented by an increased number of non-residents. The tendency to travel is continually on the increase, and doubtless more and more children are sent to country schools, and even to the Continent, for their education. Then there are many portions of the county of London which formerly contained numerous private schools, and which being now densely inhabited have become less eligible for such establishments. Many I suspect have removed across the county boundary. I say nothing of the removal of children to the sea-side or the country for their health, though even here a number of absentees, beyond what might once have existed, may reasonably be supposed.

I now turn to the variations between borough and borough at other ages. A convenient summary of the facts is contained in Table V. It must not however be forgotten that Kensal Town has been transferred from Chelsea to Paddington, lowering the relative numbers of servants and dependents in that borough, but increasing the corresponding ratios in Chelsea. Hackney has lost Stoke Newington; Greenwich has gained Charlton from Woolwich, and Lewisham has lost Eltham to Woolwich, each of the changes affecting the proportion of servants and other dependent elements. On reviewing the figures, it will be easy to see that much of the apparent variation during ten years is simply the natural effect of altered limits.

It will be seen that where many families keep servants, the numbers of single women are high; thus referring to Table II, the ratios of domestics are found to be as under in the boroughs where single women most abound, or are most rare:—

	Single Women Aged 15 and upwards to 100 Wives in 1901.	Females of the Domestic Class per Cent. on Working Males.		Single Women Aged 15 and upwards to 100 Wives in 1901.	Females of the Domestic Class per Cent. on Working Males.
Hampstead	203·5	70·2	Shoreditch	68·3	10·1
Kensington	189·2	70·8	Bethnal Green	67·4	9·0
London City	161·9	30·2	Stepney	67·3	10·3
Westminster...	159·9	41·5	Bermondsey	64·0	9·3
St. Marylebone	155·1	43·4	Poplar	62·8	8·7
Chelsea	141·8	47·5	Southwark	62·1	11·0
Paddington ...	141·4	43·6	Woolwich	54·9	11·3

The numbers of single *men* are not so excessive as those of single women save in London City and Westminster, where ordinary conditions do not prevail. The other boroughs noted for high ratios of single men are St. Marylebone, Holborn, and Chelsea, which more or less resemble the City in having considerable floating populations, and Woolwich, where the presence of 5,083 soldiers, &c., accounts for the excess. St. Pancras is affected by the great railway termini, and Stepney by the sailors and others connected with shipping, who are specially numerous in that borough. It seems singular that bachelors are comparatively few in Battersea and Fulham; this may, however, indicate prosperity amongst men engaged in the building trades.

Widows and widowers seem to have accumulated in Chelsea; a decrease of widows in Paddington shows that this is in part due to the transfer of Kensal Town.

The total numbers of adults in proportion to 100 wives are highest in London City, Westminster, St. Marylebone, Kensington, Hampstead, Holborn, and Chelsea. But this simply signifies that the attendants of wealthy families are usually unmarried people, not that the marriage-rate is less.

A regular augmentation of the proportion of single women in Shoreditch, Bethnal Green, Stepney, Poplar, and Bermondsey is observed. This, however, is not due to any extension in the numbers of female domestic (in-door) servants. The following table shows the numbers in 1891 and 1901 in five divisions of London, adjusting the latest returns so as to make them comparable with those for 1891:—

	Working Males.		Female Servants, In-door.		Percentage.	
	1891.	1901.	1891.	1901.	1891.	1901.
West	208,288	236,846	80,569	83,397	38·7	35·2
North	294,296	321,181	63,325	60,519	21·5	18·8
Central	83,498	73,567	10,958	8,337	13·1	11·3
East	221,408	227,059	13,365	11,162	6·0	4·9
South	446,837	536,266	70,149	70,304	15·7	13·1
	1,254,327	1,394,869	238,366	233,719	19·0	16·8

This table exhibits an actual decrease in the numbers of female domestic servants in most parts of London, and a decrease, relatively to population, seems universal.[12] The eastern division includes the boroughs of Shoreditch, Bethnal Green, Stepney, and Poplar.

Abandoning the idea of an increased demand for domestic servants, another explanation has to be sought for the increased proportions of single people in these eastern boroughs; and I think we may find it in the fact that whilst there are fewer one-room tenements than in 1891, a larger proportion of those tenements are occupied by one person, so that probably many married people have gone further afield in search of quarters. The following table will illustrate this change:—

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[12] This may be due partly to the decline in the numbers of children, partly to the increasing difficulty in obtaining servants.

	Number of One-Room Tenements.		Inhabited by 1 Person.		Inhabited by 2 Persons.		Inhabited by 3 or more Persons.		
	1891.	1901.	1891.	1901	1891.	1901.	1891.	1901.	Decrease per Cent.
Finsbury........	8,505	6,364	2,283	1,993	2,862	2,144	3,360	2,227	34
Shoreditch ...	8,373	6,705	2,337	2,042	2.869	2,358	3,167	2,305	27
Bethnal Green	6,561	5,378	1,555	1,519	2,079	1,817	2,927	2,042	30
Stepney	16,101	13,282	4,136	3,081	5,132	4,278	6,833	5,928	13
Poplar	4,348	3,935	1,488	1,435	1,526	1,313	1,334	1,187	11
Bermondsey	5,111	4,258	1,731	1,645	1,640	1,424	1,740	1,189	32
Southwark	11,767	9,896	3,593	3,646	4,262	3,544	3,912	2,706	31
Greenwich and Deptford	3,799	3,349	1,528	1,520	1,180	1,027	1,091	802	27
Total........	64,565	53,167	18,651	16,881	21,550	17,900	24,364	18,386	25

The decrease in the number of tenements occupied by one person is less than 10 per cent., whilst that in the number of tenements occupied by three or more persons is almost 25 per cent. In the rest of the metropolitan boroughs similar changes occurred, so that we are justified in concluding that many married couples migrated beyond the county boundary. It may be here noted that the boroughs in which symptoms of over-crowding are most marked are Stepney and Bethnal Green; and Stepney is the one borough in the above table to which my general remarks do not apply.

Reverting to Table V, it will be observed that the constituents of population in some boroughs have varied very little. These are Wandsworth (with Battersea), Lambeth, and Islington. In the last-named borough I venture to imagine there are signs of a declension, more markedly shown in the figures for Hackney.[13] These boroughs are fast filling up and losing their attractions, and the tendency will be for them to descend towards the level of Shoreditch. Camberwell, on the contrary, seems for the present to maintain its status.

It is not easy to determine how far the visible change in Lewisham is due to the exclusion of Eltham. Throwing together the four boroughs of Woolwich, Greenwich, Lewisham, and Deptford, we obtain the following comparison:—

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[13] Possibly the exclusion of Stoke Newington may sufficiently account for this apparent decline.

	Per 100 Wives.		Difference.	
	1891.	1901.	More.	Less.
Single women	83·9	80·8	—	3·1
„ men	75·7	78·4	2·7	—
Widows	23·3	21·0	—	2·3
Widowers	8·4	8·4	—	—
Old married men	6·3	5·7	—	0·6
„ women	3·9	3·7	—	0·2
Married, 15—65	196·3	195·7	—	0·6
Differences	0·1	0·1	—	—
	397·9	393·8	2·7	6·8

This calculation shows that collectively a decrease has taken place in the proportion of single women, and also of widows, which seems to me to point to a loss of residential attraction in some parts of the borough of Lewisham.

Similar observations apply to the aggregation of Hammersmith and Fulham, and to Hampstead.

Paddington requires to be taken together with Chelsea, if we would eliminate the consequences of the altered boundaries, as shown in the following table:—

	Per 100 Wives.		Difference.	
	1891.	1901.	More.	Less.
Single women	130·1	141·5	11·4	—
„ men	81·0	84·4	3·4	—
Widows	32·4	32·7	0·3	—
Widowers	9·4	11·2	1·8	—
Old married men	5·7	6·3	0·6	—
„ women	3·5	3·9	0·4	—
Married, 15—65	194·8	194·2	—	0·6
Differences	0·1	—	—	0·1
	457·0	474·2	17·9	0·7

This table suggests a certain increase in prosperity, which may probably affect Chelsea the most.

Kensington indicates hardly any change in circumstances. A small addition from Chelsea of 3,275 inhabitants (part of Kensal Town sub-district) was not sufficient to counterbalance the slightly favourable tendency.

St. Marylebone seems to grow industrious, the increased numbers of single women not representing an augmentation of the ranks of domestic servants. St. Pancras, in a much less marked manner, displays a similar tendency.

London, Westminster, and Holborn all show increased proportions of unmarried men and women, in decreasing populations. There is a curious decrease in the numbers of resident widows and widowers, yet these classes stand high, having regard to the non-residential character of such places. In the City of London there are 112·7 husbands at ages 15—65 against 100 wives; thus the usual order of things is reversed, doubtless through the number of temporary visitants on commercial errands.

Table V may be usefully studied with a view to the points of *resemblance* which will be found to exist between the statistics of several boroughs, notwithstanding the sharp contrasts which are also noticeable. For instance, the Islington figures in 1901 resembled those for Hammersmith.

Female Population in Wards.

It may be of interest if I state that the 28 boroughs outside London City are divided into 269 wards, whereof

61 showed an excess of male over female inhabitants.
57 „ females not more than 5 per cent. in excess.
62 „ „ in excess from 5 to 15 per cent.
89 „ „ more than 15 per cent. in excess.

	Excess of Males.	Females in Excess.				Excess of Males.	Females in Excess.		
		Under 5 per Cent.	5 to 15 per Cent.	Over 15 per Cent.			Under 5 per Cent.	5 to 15 per Cent.	Over 15 per Cent.
Stepney	11	5	3	—	Fulham	—	3	2	3
Poplar	6	6	2	—	Camberwell	—	7	6	7
Woolwich	9	—	1	1	Hammersmith	1	1	3	2
Finsbury	2	7	2	—	Islington	2	—	6	3
Bermondsey	4	5	3	—	Paddington	1	—	2	5
Bethnal Green	—	3	1	—	Kensington	—	1	—	8
Southwark	4	3	3	—	St. Marylebone	1	—	—	8
Greenwich	4	1	2	1	Chelsea	—	—	1	4
Shoreditch	—	5	3	—	Hampstead	—	—	—	7
Battersea	2	3	1	3	Lewisham	—	—	2	8
St. Pancras	1	3	4	—	Wandsworth	—	—	3	6
Deptford	2	1	1	2	Hackney	—	—	3	5
Holborn	4	—	2	3	Stoke Newington	—	—	1	5
Lambeth	2	2	1	4					
Westminster	5	1	4	4					

The wards in London City are numerous, and as many of them are insignificant in population, I do not here refer to them.

TABLE I.—*Percentages of "Working Males," in each Class of Occupation, for the Metropolitan Cities and Boroughs.*

	London, City.	Holborn.	Westminster, City.	Southwark.	Finsbury.	St. Pancras.	Shoreditch.	Bethnal Green.	Stepney.	Poplar.
I and II. Agriculture and fishing	0·2	0·4	0·3	0·2	0·1	0·5	0·1	0·1	0·2	0·1
III (*a.*) Commercial	19·3	9·7	7·3	5·8	4·9	8·4	3·3	3·0	4·6	5·8
(*b.*) Ship building	—	—	—	0·1	—	—	—	0·1	0·4	2·8
(*c.*) Merchant and dock service	3·0	0·6	0·6	2·3	0·7	0·3	1·0	2·4	9·8	13·6
(*d.*) Railways, hotels, &c.	6·6	3·5	5·3	—	0·2	4·9	0·1	—	0·1	1·4
IV. Mining, quarrying	0·1	0·1	0·1	0·2	0·1	0·1	0·1	0·1	0·1	0·2
V. Textile and allied manufactures	1·0	1·6	2·8	0·8	1·3	0·9	4·8	8·3	16·6	0·7
VI. Metal, tools, manufactures	2·0	4·6	2·8	7·0	10·6	4·9	6·3	4·0	3·4	11·1
VII. Other manufactures	3·4	8·7	2·8	13·4	15·4	10·5	24·4	25·9	9·4	7·3
VIII. Defence	0·4	0·3	7·2	0·3	0·4	1·0	0·2	0·2	0·6	0·2
IX. Primary occupations, indefinite	0·9	0·7	0·6	1·1	1·6	0·9	1·6	1·1	1·1	2·2
	37·0	30·2	29·9	31·2	35·1	32·3	41·9	45·3	46·3	44·8
X (*a.*) Railway traffic	0·7	0·5	0·6	1·6	1·5	2·0	0·9	1·4	0·9	2·0
(*b.*) Road traffic	2·0	6·3	5·4	10·0	10·9	9·9	8·8	9·3	7·7	5·8
(*c, d.*) Messages, warehousing	10·7	6·3	5·0	6·5	7·7	5·2	6·7	5·6	4·5	3·7
XI. (*a.*) Buildings and furniture	2·8	6·5	6·2	10·1	8·6	11·5	8·3	7·2	6·1	8·2
(*b.*) Food and lodging	8·5	9·3	8·8	8·8	8·6	8·9	7·6	7·9	8·3	6·9
(*c.*) Dress	7·4	5·2	5·2	5·7	5·0	5·2	5·4	4·9	5·2	3·7
(*d.*) Carriages and harness	0·3	1·0	0·8	1·0	1·0	1·0	1·2	0·7	0·6	0·7
(*e.*) Sundry shopkeepers	3·4	5·1	3·6	3·8	4·4	4·8	4·6	3·8	3·1	2·6
(*f, g.*) Sundry tradesmen	1·2	3·8	2·1	3·5	3·4	3·2	3·4	2·9	3·2	5·2
XII. Domestics	11·0	4·9	16·8	2·3	2·2	3·1	1·5	1·2	1·3	0·9
XIII (*a.*) Law, medicine, divinity	2·6	3·8	3·1	1·0	1·0	2·1	0·6	0·5	0·7	0·7
(*b.*) Education, literature, arts	1·7	5·2	3·3	1·6	1·4	3·1	0·6	0·6	1·0	0·7
XIV. General and local government	7·3	2·6	4·8	3·0	2·8	3·0	1·4	1·7	1·6	1·8
XV. Secondary occupations, indefinite	1·3	3·0	1·1	2·6	1·9	1·1	2·0	2·1	2·6	1·2
	60·9	63·4	66·6	61·5	60·4	64·1	53·0	50·0	46·9	44·1
Indefinite workers	2·0	6·4	3·5	7·3	4·4	8·7	5·1	4·7	6·8	11·1

TABLE I *Contd.—Percentages of "Working Males," in each Class of Occupation, for the Metropolitan Cities and Boroughs.*

	Bermondsey.	Deptford.	Greenwich.	Woolwich.	St. Marylebone.	Chelsea.	Kensington.	Paddington.	Hampstead.	Fulham.
I and II. Agriculture and fishing	0·1	0·4	1·1	0·9	0·5	0·8	0·7	0·5	1·7	0·9
III (*a.*) Commercial	5·8	11·1	6 1	2·8	7·4	6·9	9·5	10·4	19·1	9·5
(*b.*) Ship building	1 1	0·8	1·5	0·1	—	—	—	—	—	—
(*c.*) Merchant and dock service	13·5	5·1	6·0	2 0	0·3	0·5	0·3	0·5	0·3	0·4
(*d.*) Railways, hotels, &c.	0·3	4·3	—	—	1 3	—	0 3	4·1	0 4	0·8
IV. Mining, quarrying	0·2	0·1	0 2	0·1	0·1	—	0·1	0·1	0 1	0·1
V. Textile and allied manufactures	0 6	0·3	0·1	0·1	3·1	0 1	0·9	0·6	0 2	0·3
VI. Metal, tools, manufactures	5·4	11·8	15·7	19·1	3·2	3·3	2 6	3·1	3·2	4·4
VII. Other manufactures	14·3	5·7	3·2	5·4	3·2	2·2	1·8	3·0	3·4	8·0
VIII. Defence	0·2	0·4	6·4	12·5	1·0	1·5	2·5	1·0	0·5	0·7
IX. Primary occupations, indefinite	1·8	2·0	3·7	8·9	0·4	0·5	0·5	0·4	0·3	0·7
	43·3	42·1	44·0	51·9	20·4	15·8	19·2	23·6	29·0	20·8
X (*a.*) Railway traffic	1·9	2·0	1·5	0·9	1·5	0·5	2·1	2·0	2 1	2·0
(*b.*) Road traffic	8·3	5 0	3·9	2·5	9 2	9·6	9·5	10·9	6·5	9 9
(*c. d.*) Messages, warehousing	5·8	3·3	2·6	1·6	5·8	5·4	4 4	4·3	2 7	4 6
XI (*a.*) Buildings and furniture	6·6	10·2	8·9	9·3	11·4	16·0	13·4	13·7	11·0	19·1
(*b.*) Food and lodging	8·1	8·3	6·6	5·3	9 6	10·1	9·7	9 6	9·9	10·0
(*c.*) Dress	3·4	4·1	2·5	2·8	7·8	5·8	4 9	6·1	6·0	4·8
(*d.*) Carriages and harness	0·9	0·9	0·8	1·0	1 1	1·1	1·1	1·1	0·9	1·1
(*e.*) Sundry shopkeepers	3·0	3·4	1·9	1·3	4·2	3·5	3·6	4·3	5·8	4·0
(*f, g.*) Sundry tradesmen	3·7	4 8	5·5	4·2	2·9	2·8	3·3	3·4	2·4	4·4
XII. Domestics	1·2	1·0	2·2	1·1	9·8	11·3	9·5	6·5	5·5	3·2
XIII (*a.*) Law, medicine, divinity	0·7	1·2	1·3	0·7	4·0	2·5	4·9	3·9	5·4	1·9
(*b.*) Education, literature, arts	0·6	2·4	2·1	1·2	3·4	3·7	4·1	3·1	5·9	3·9
XIV. General and local government	2·5	2·7	3·1	5·2	3 2	4·5	3·1	3·6	3·6	3 8
XV. Secondary occupations, indefinite	1·2	1·6	0·6	0 6	1·1	1 2	1·8	0·7	0·5	1 0
	47·8	50·9	43·7	37·8	75·0	77·9	75·3	73·2	68·3	73·6
Indefinite workers	8·9	7·0	12·3	10 3	4·6	6·3	5·5	3·3	2·7	5·6

TABLE I *Contd.—Percentages of "Working Males," in each Class of Occupation, for the Metropolitan Cities and Boroughs.*

	Wandsworth.	Lewisham.	Hammersmith.	Battersea.	Lambeth.	Camberwell.	Hackney.	Stoke Newington.	Islington.
I and II. Agriculture and fishing	1·6	2·6	0·9	0·4	0·8	0·6	0·5	0·6	0·4
III (*a.*) Commercial	15·8	20·6	10·7	9·5	12·8	14·4	14·8	23·7	11·7
(*b.*) Ship building	0·1	0·1	0·2	0·2	—	—	—	—	—
(*c.*) Merchant and dock service	0·7	0·7	0·5	0·9	0·9	1·0	0·8	0·4	0·3
(*d.*) Railways, hotels, &c.	0·6	0·7	2·0	4·1	1·3	—	—	—	1·9
IV. Mining, quarrying	0·1	0·1	0·1	0·2	0·2	0·2	0·1	0·1	0·1
V. Textile and allied manufactures	0·3	0·2	1·2	0·3	0·2	0·5	3·6	0·5	0·4
VI. Metal, tools, manufactures	4·4	3·9	5·3	7·0	5·8	5·3	4·6	4·5	7·3
VII. Other manufactures	4·0	3·2	3·4	6·3	7·4	10·3	13·5	9·5	10·8
VIII. Defence	0·5	0·7	0·4	0·6	0·4	0·4	0·2	0·2	0·3
IX. Primary occupations, indefinite	0·6	0·6	0·8	1·4	0·9	0·8	0·9	0·4	0·9
	28·6	33·4	25·6	30·9	30·6	33·5	39·1	39·9	33·5
X (*a.*) Railway traffic	2·1	2·0	2·0	1·9	2·0	2·0	1·8	1·0	2·0
(*b.*) Road traffic	5·7	4·3	7·5	5·7	8·2	7·7	5·8	4·4	9·9
(*c, d.*) Messages, warehousing	2·9	2·7	3·4	4·2	4·3	4·5	4·3	3·4	4·4
XI (*a.*) Buildings and furniture	15·4	14·1	17·7	16·3	12·3	13·0	10·5	10·7	11·8
(*b.*) Food and lodging	9·0	9·6	9·1	7·8	9·7	9·3	8·7	9·2	8·7
(*c.*) Dress	5·1	5·6	5·4	4·9	4·9	5·7	6·8	7·2	5·6
(*d.*) Carriages and harness	1·0	0·9	1·0	1·0	1·0	1·0	1·0	1·0	0·9
(*e.*) Sundry shopkeepers	4·5	4·5	4·3	3·9	4·2	4·3	5·3	6·0	4·9
(*f, g.*) Sundry tradesmen	3·4	3·5	3·7	4·8	4·0	4·1	3·2	2·4	3·3
XII. Domestics	4·1	3·1	2·0	1·9	2·7	2·0	1·5	1·5	1·6
XIII (*a.*) Law, medicine, divinity	3·2	2·7	2·0	1·8	2·0	1·9	2·0	2·8	1·9
(*b.*) Education, literature, arts	4·4	4·1	4·2	3·2	4·0	2·6	2·4	3·5	2·5
XIV. General and local government	4·6	3·9	3·2	4·2	4·0	3·3	3·1	4·4	4·0
XV. Secondary occupations, indefinite	0·9	0·5	1·2	1·3	1·2	1·2	1·0	0·6	1·0
	66·4	61·6	66·9	62·9	64·3	62·6	57·3	58·1	62·5
Indefinite workers	5·0	4·9	7·5	6·2	5·0	3·9	3·5	2·0	4·0

TABLE II.—*Working Females. Numbers Enumerated (to each 100 "Working Males") in the Principal Classes of Occupation*

	London, City.	Holborn.	Westminster, City.	Southwark.	Finsbury.	St. Pancras.	Shoreditch.	Bethnal Green.	Stepney.	Poplar.
III (*a.*) Commercial	1·6	2·0	1·5	0·9	0·9	1·6	0·4	0·3	0·5	0·6
(*d.*) Hotels, &c.	10·1	5·3	5·2	0·3	0·1	0·4	—	—	—	—
V. Textile and allied manufactures	1·1	2·0	4·8	3·0	5·3	3·7	11·7	13·9	10·8	5·4
VI. Metals, tools, manufactures	0·1	0·4	0·5	0·6	1·2	0·6	0·9	0·6	0·2	0·4
VII. Other manufactures	3·0	4·2	0·8	8·2	12·6	3·0	12·6	12·7	5·2	5·8
Remaining primary occupations	0·1	0·6	0·2	0·5	0·6	0·4	0·5	0·4	0·5	0·6
	16·0	14·4	13·1	13·4	20·7	9·7	26·1	27·9	17·2	12·8
XI (*b.*) Food and lodging	3·3	5·1	3·5	3·0	3·1	3·5	2·7	2·5	2·7	2·5
(*c.*) Dress	6·9	7·7	9·1	8·5	8·1	8·4	8·3	7·5	7·2	7·2
Other shopkeepers, &c.	1·4	2·0	1·0	1·7	2·3	1·8	2·4	2·9	1·3	1·6
XII. Domestics	30·2	21·0	41·5	11·0	12·4	17·9	10·1	9·0	10·3	8·7
XIII (*a.*) Nurses, &c.	2·8	2·1	1·7	1·2	1·0	1·3	0·7	0·8	1·1	0·8
(*b.*) Teachers, artists	0·9	3·2	2·3	1·2	0·6	2·2	0·4	0·4	0·8	1·1
Remaining secondary occupations	1·1	2·2	1·1	1·1	1·7	1·3	1·5	1·4	1·2	1·0
	46·7	43·2	60·2	27·7	29·3	36·5	26·2	24·6	24·5	23·0

TABLE II *Contd.*—*Working Females. Numbers Enumerated (to each* 100 *"Working Males") in the Principal Classes of Occupations.*

	Bermondsey.	Deptford.	Greenwich.	Woolwich.	St. Marylebone.	Chelsea.	Kensington.	Paddington.	Hampstead.	Fulham.
III (*a.*) Commercial	0·7	1·5	0·7	0·5	1·6	1·7	1·6	2·0	2·5	1·5
(*d.*) Hotels, &c.	—	—	—	—	0·7	—	1·0	0·4	—	—
V. Textile and allied manufactures	4·9	1·3	0·2	0·3	10·7	6·4	9·0	6·3	1·9	6·1
VI. Metals, tools, manufactures	1·7	0·7	0·4	0·3	0·1	—	—	0·1	0·1	0·2
VII. Other manufactures	8·0	1·1	0·8	0·2	0·8	0·3	0·2	0·3	0·3	0·2
Remaining primary occupations	0·7	0·2	0·1	0·1	0·1	0·2	0·2	0·2	0·1	0·1
	16·0	4·8	2·2	1·4	14·1	8·6	12·1	9·3	4·9	8·1
XI (*b.*) Food and lodging	3·0	2·5	1·7	1·6	3·7	2·9	3·4	3·6	2·6	2·2
(*c.*) Dress	7·0	7·9	5·8	6·4	10·8	8·5	7·7	8·4	6·9	6·4
Other shopkeepers, &c.	1·6	1·2	0·5	0·4	1·4	1·0	0·9	1·1	1·0	0·7
XII. Domestics	9·3	15·6	20·8	11·3	43·4	47·5	70·8	43·6	70·2	19·0
XIII (*a.*) Nurses, &c.	0·6	1·1	1·6	0·7	3·5	2·4	2·3	2·1	3·1	1·5
(*b.*) Teachers, artists	0·8	3·0	2·3	1·7	3·1	3·4	4·1	3·3	6·3	3·0
Remaining secondary occupations	1·1	1·2	1·1	0·8	1·1	1·8	1·6	1·1	1·0	0·9
	23·4	32·5	33·8	23·0	66·9	67·5	90·7	63·2	91·1	33·7

TABLE II *Contd.*—*Working Females. Numbers Enumerated (to each* 100 *"Working Males") in the Principal Classes of Occupations.*

	Wandsworth.	Lewisham.	Hammersmith.	Battersea.	Lambeth.	Camberwell.	Hackney.	Stoke Newington.	Islington.
III (*a.*) Commercial	1·9	2·0	1·8	1·7	1·9	1·9	2·0	3·0	2·0
(*d.*) Hotels, &c.	—	—	—	—	—	—	—	—	—
V. Textile and allied manufactures	2·8	2·2	9·6	4·4	2·5	5·4	8·5	5·4	5·0
VI. Metals, tools, manufactures	0·2	0·1	0·4	0·3	0·3	0·3	0·5	0·3	0·9
VII. Other manufactures	0·6	0·2	0·3	1·4	2·2	2·4	4·5	2·3	3·8
Remaining primary occupations	0·1	0·1	0·1	0·3	0·2	0·1	0·2	0·1	0·3
	5·5	4·5	12·2	8·2	7·1	10·1	15·7	11·1	12·1
XI (*b.*) Food and lodging	2·0	1·9	2·4	2·1	3·0	2·7	2·7	2·6	2·9
(*c.*) Dress	6·7	6·8	6·9	7·8	9·0	9·5	9·6	9·5	9·5
Other shopkeepers, &c.	0·7	0·7	1·0	1·1	1·5	1·5	1·6	1·2	1·8
XII. Domestics	31·7	33·[illegible]	18·9	13·8	18·7	15·9	18·3	25·4	16·8
XIII (*a.*) Nurses, &c.	1·8	1·8	1·5	1·0	1·5	1·0	1·8	1·5	1·1
(*b.*) Teachers, artists	3·8	[illegible]·9	3·3	2·5	3·0	2·5	2·8	3·7	2·3
Remaining secondary occupations	1·0	[illegible]·1	1·1	1·1	1·3	1·3	1·2	1·3	1·4
	47·7	49·3	35·2	29·4	37·9	34·6	38·1	45·2	35·8

TABLE III.—*Proportions, per* 100 "*Working Males,*" *of Persons Aged* 25—65 *described as Living on their Own Means, Retired or Pensioners, or Undescribed* (*including Students*).

	Females 25—65.				Males 25—65.			
	Living on Own Means.	Retired and Pensioners.	Others.	Total.*	Living on Own Means.	Retired and Pensioners.	Others.	Total.
Hampstead	7·1	0·4	64·2	71·7	1·6	1·2	1·2	4·0
Lewisham	4·8	0·3	63·8	68·9	0·8	1·4	0·9	3·1
Wandsworth	4·7	0·7	62·6	68·0	1·0	2·1	1·1	4·2
Kensington	9·5	0·6	55·9	66·0	2·0	1·2	1·7	4·9
StokeNewington	4·6	0·2	59·2	64·0	0·8	1·1	1·0	2·9
Fulham	4·4	0·2	58·5	63·1	0·9	0·9	0·7	2·5
Paddington	6·7	0·3	54·6	61·6	1·3	0·9	1·1	3·3
Camberwell	2·3	0·3	55·8	58·4	0·4	1·2	1·3	2·9
Battersea	2·2	0·1	55·9	58·2	0·5	0·6	0·7	1·8
Lambeth	3·1	0·3	54·2	57·6	0·6	0·9	1·1	2·6
Deptford	2·0	0·1	55·4	57·5	0·5	0·7	1·2	2·4
Hammersmith	4·6	0·2	51·4	56·2	1·0	0·7	1·1	2·8
Chelsea	5·1	0·9	50·0	56·0	1·1	2·9	1·5	5·5
Hackney	2·3	0·3	53·3	55·9	0·5	0·8	0·8	2·1
Islington	2·6	0·3	51·7	54·6	0·5	0·8	1·0	2·3
Greenwich	1·8	0·3	52·0	54·1	0·3	1·0	0·8	2·1
St. Pancras	2·2	0·3	47·4	49·9	0·5	0·7	0·8	2·0
Poplar	0·6	0·2	48·9	49·7	0·2	0·7	1·0	1·9
Woolwich	1·0	0·2	48·4	49·6	0·2	1·0	0·5	1·7
St. Marylebone	5·0	0·4	43·9	49·3	1·4	0·9	1·2	3·5
Bermondsey	0·5	0·3	48·0	48·8	0·1	0·5	0·9	1·5
Southwark	0·8	0·3	45·7	46·8	0·2	0·7	0·7	1·6
Bethnal Green	0·5	0·3	43·5	44·3	0·1	0·6	0·6	1·3
Finsbury	0·6	0·2	43·3	44·1	0·2	0·3	0·9	1·4
Stepney	0·5	0·2	42·8	43·5	0·1	0·4	0·8	1·3
Shoreditch	0·3	0·4	42·4	43·1	0·1	0·8	1·1	2·0
Westminster	3·6	0·2	37·4	41·2	2·0	0·6	1·9	4·5
Holborn	3·2	0·2	34·6	38·0	1·4	0·7	2·0	4·1
London City	0·5	—	27·8	28·3	0·3	0·3	1·0	1·6

* The table is arranged in the order of these totals.

TABLE IV.—*Proportions, per* 100 "*Working Males,*" *of Persons Aged* 65 *and upwards described as Living on their Own Means, Retired or Pensioners, or Undescribed.*

	Females 65 and upwards.				Males 65 and upwards.			
	Living on Own Means.	Retired and Pensioners.	Others.	Total.*	Living on Own Means.	Retired and Pensioners.	Others.	Total.
Chelsea	2·4	3·3	4·7	10·4	0·5	6·3	0·3	7·1
Kensington	3·7	1·5	5·1	10·3	0·8	2·0	0·5	3·3
Hampstead	3·5	0·4	5·8	9·7	0·7	1·9	0·3	2·9
StokeNewington	3·3	0·4	5·7	9·4	0·6	1·9	0·4	2·9
Lewisham	2·9	0·8	5·6	9·3	0·5	2·5	0·4	3·4
Paddington	3·5	0·8	4·6	8·9	0·7	1·3	0·3	2·3
Wandsworth	2·6	0·6	5·2	8·4	0·6	2·5	0·4	3·5
Hackney	1·8	1·0	5·1	7·9	0·4	1·8	0·4	2·6
Camberwell	1·8	0·7	5·2	7·7	0·5	1·9	0·4	2·8
Hammersmith	2·7	0·2	4·6	7·5	0·6	0·9	0·4	1·9
Lambeth	2·1	0·6	4·8	7·5	0·4	1·7	0·4	2·5
St. Marylebone	2·0	1·5	3·9	7·4	0·5	1·8	0·3	2·6
Greenwich	1·4	0·9	4·9	7·2	0·3	2·3	0·4	3·0
Islington	1·8	0·8	4·5	7·1	0·4	1·6	0·4	2·4
St. Pancras	1·4	1·1	3·9	6·4	0·4	1·3	0·3	2·0
Fulham	1·8	0·7	3·8	6·3	0·4	1·2	0·3	1·9
Deptford	1·5	0·2	4·4	6·1	0·4	1·3	0·3	2·0
Shoreditch	0·4	1·6	3·9	5·9	0·1	2·0	0·3	2·4
Poplar	0·7	1·0	4·2	5·9	0·2	2·1	0·4	2·7
Battersea	1·3	0·2	4·1	5·6	0·3	1·0	0·3	1·6
Bermondsey	0·5	0·7	4·3	5·5	0·2	1·1	0·5	1·8
Bethnal Green	0·4	1·2	3·5	5·1	0·2	1·8	0·4	2·4
Woolwich	0·8	0·4	3·8	5·0	0·3	2·1	0·3	2·7
Westminster	1·2	0·4	3·0	4·6	0·5	0·8	0·3	1·6
Southwark	0·6	0·7	3·2	4·5	0·2	1·4	0·3	1·9
Stepney	0·4	0·8	3·2	4·4	0·1	1·0	0·4	1·5
London City	0·5	0·3	3·6	4·4	0·1	0·3	0·3	0·7
Finsbury	0·5	0·1	3·4	4·0	0·1	0·4	0·3	0·8
Holborn	0·8	0·5	2·6	3·9	0·2	1·0	0·2	1·4

* This table is arranged in the order of these totals.

TABLE V.—*Proportions of Population (to every* 100 *Wives Aged* 15—65), *Enumerated in various Metropolitan Boroughs.*

	London, City.				Holborn and Finsbury.			
	Per 100 Wives.		Difference.		Per 100 Wives.		Difference.	
	1891.	1901.	More.	Less.	1891.	1901.	More.	Less.
Single women............	143·0	161·9	18·9	—	77·6	84·6	7·0	—
„ men	162·8	185·8	23·0	—	87·3	96·8	9·5	—
Widows	46·6	40·5	—	**6·1**	29·0	28·4	—	**0·6**
Widowers	12·4	11·0	—	**1·4**	11·0	10·5	—	**0·5**
Old married men	8·0	7·1	—	**0·9**	4·6	4·4	—	**0·2**
„ women	4·5	4·6	0·1	—	2·6	2·6	—	—
Married, 15—65	207·1	212·7	5·6	—	197·9	197·6	—	**0·3**
Differences*	**0·2**	0·2	0·4	—	0·1	0·1	—	—
	584·2	623·8	48·0	**8·4**	410·1	425·0	16·5	**1·6**

	Westminster.				Southwark.			
	Per 100 Wives.		Difference.		Per 100 Wives.		Difference.	
	1891.	1901.	More.	Less.	1891.	1901.	More.	Less.
Single women............	139·2	159·9	20·7	—	57·4	62·1	4·7	—
„ men	121·5	133·2	11·7	—	76·3	78·0	1·7	—
Widows	35·0	32·1	—	**2·9**	24·4	23·5	—	**0·9**
Widowers	11·8	10·3	—	**1·5**	9·9	10·7	0·8	—
Old married men	6·3	6·0	—	**0·3**	4·5	4·1	—	**0·4**
„ women	3·7	3·5	—	**0·2**	2·8	2·6	—	**0·2**
Married, 15—65	198·9	198·7	—	**0·2**	197·2	197·0	—	**0·2**
Differences	0·1	—	—	**0·1**	**0·2**	—	0·2	—
	516·5	543·7	32·4	**5·2**	372·3	378·0	7·4	**1·7**

	Kensington.				Paddington.			
	Per 100 Wives.		Difference.		Per 100 Wives.		Difference.	
	1891.	1901.	More.	Less.	1891.	1901.	More.	Less.
Single women............	188·0	189·2	1·2	—	160·7	141·4	—	**19·3**
„ men	80·0	78·8	—	**1·2**	79·3	80·7	1·4	—
Widows	37·2	36·6	—	**0·6**	34·5	30·4	—	**4·1**
Widowers	9·3	9·2	—	**0·1**	8·5	8·5	—	—
Old married men	7·0	7·3	0·3	—	6·4	6·1	—	**0·3**
„ women	4·0	3·9	—	**0·1**	3·8	3·9	0·1	—
Married, 15—65	192·9	198·7	—	**1·2**	193·8	194·4	0·6	—
Differences	—	0·1	0·1	—	0·1	—	—	**0·1**
	518·4	516·8	1·6	**3·2**	487·1	465·4	2·1	**23·8**

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* These are simply fractions, to reconcile the correct total ratios with the approximately correct details.

TABLE V *Contd.—Proportions of Population per* 100 *Wives*

	Hampstead.				Hammersmith and Fulham.			
	Per 100 Wives.		Difference.		Per 100 Wives.		Difference.	
	1891.	1901.	More.	Less.	1891.	1901.	More.	Less.
Single women	206·4	203·5	—	**2·9**	82·3	77·5	—	**4·8**
„ men	82·9	81·9	—	**1·0**	60·7	66·0	5·3	—
Widows	31·2	29·1	—	**2·1**	25·0	23·6	—	**1·4**
Widowers	8·1	7·9	—	**0·2**	7·2	7·3	0·1	—
Old married men	6·8	6·9	0·1	—	4·6	4·4	—	**0·2**
„ women	4·0	4·3	0·3	—	3·0	2·9	—	**0·1**
Married, 15—65	193·8	192·6	—	**1·2**	195·5	195·3	—	**0·2**
Differences	**0·1**	—	0·1	—	**0·2**	—	0·2	—
	533·1	526·2	0·5	**7·4**	378·1	377·0	5·6	**6·7**

	Camberwell.				Hackney.			
	Per 100 Wives.		Difference.		Per 100 Wives.		Difference.	
	1891.	1901.	More.	Less.	1891.	1901.	More.	Less.
Single women	82·9	84·4	1·5	—	102·6	97·6	—	**5·0**
„ men	69·2	72·9	3·7	—	73·2	73·9	0·7	—
Widows	25·2	25·0	—	**0·2**	27·3	25·5	—	**1·8**
Widowers	8·5	9·1	0·6	—	9·4	8·6	—	**0·8**
Old married men	5·5	5·4	—	**0·1**	6·1	5·9	—	**0·2**
„ women	3·6	3·7	0·1	—	3·9	4·1	0·2	—
Married, 15—65	195·8	195·4	—	**0·4**	195·7	195·4	—	**0·3**
Differences	**0·1**	—	0·1	—	0·1	0·1	—	—
	390·6	395·9	6·0	**0·7**	418·3	411·1	0·9	**8·1**

	Islington.				Shoreditch.			
	Per 100 Wives.		Difference.		Per 100 Wives.		Difference.	
	1891.	1901.	More.	Less.	1891.	1901.	More.	Less.
Single women	88·4	86·1	—	**2·3**	61·3	68·3	7·0	—
„ men	75·3	76·0	0·7	—	69·8	75·6	5·8	—
Widows	27·0	25·9	—	**1·1**	27·0	27·0	—	—
Widowers	8·9	9·1	0·2	—	10·7	11·5	0·8	—
Old married men	5·3	5·3	—	—	4·7	4·6	—	**0·1**
„ women	3·3	3·5	0·2	—	2·9	3·2	0·3	—
Married, 15—65	197·1	196·6	—	**0·5**	196·9	197·0	0·1	—
Differences	—	**0·1**	—	**0·1**	0·1	—	—	**0·1**
	405·3	402·4	1·1	**4·0**	373·4	387·2	14·0	**0·2**

TABLE V *Contd.—Proportions of Population per* 100 *Wives.*

	St. Pancras.				St. Marylebone.			
	Per 100 Wives.		Difference.		Per 100 Wives.		Difference.	
	1891.	1901.	More.	Less.	1891.	1901.	More.	Less.
Single women	80·7	83·8	3·1	—	139·7	155·4	15·7	—
„ men	81·9	87·0	5·1	—	90·7	99·3	8·6	—
Widows	27·6	27·2	—	0·4	34·9	33·7	—	1·2
Widowers	9·1	10·1	1·0	—	10·8	11·4	1·1	—
Old married men	5·1	5·4	0·3	—	6·9	6·3	—	0·6
„ women	3·2	3·6	0·4	—	4·1	3·7	—	0·4
Married, 15—65	196·4	196·5	0·1	—	194·5	193·8	—	0·7
Differences	—	—	—	—	—	0·1	0·1	—
	404·0	413·6	10·0	0·4	481·1	503·7	25·5	2·9

	Chelsea.				Wandsworth and Battersea.			
	Per 100 Wives.		Difference.		Per 100 Wives.		Difference.	
	1891.	1901.	More.	Less.	1891.	1901.	More.	Less.
Single women	95·4	141·8	46·4	—	92·0	92·1	0·1	—
„ men	82·6	92·0	9·4	—	67·3	68·2	0·9	—
Widows	30·0	37·4	7·4	—	21·9	22·0	0·1	—
Widowers	10·8	16·8	6·0	—	8·0	7·9	—	0·1
Old married men	5·0	6·6	1·6	—	5·2	5·0	—	0·2
„ women	3·0	4·0	1·0	—	3·3	3·3	—	—
Married, 15—65	195·9	193·6	—	2·3	196·5	195·6	—	0·9
Differences	0·1	—	—	0·1	0·1	0·1	0·2	—
	422·8	492·2	71·8	2·4	394·1	394·2	1·3	1·2

	Lewisham.				Lambeth.			
	Per 100 Wives.		Difference.		Per 100 Wives.		Difference.	
	1891.	1901.	More.	Less.	1891.	1901.	More.	Less.
Single women	140·8	113·1	—	27·7	85·9	86·8	0·9	—
„ men	69·9	67·7	—	2·2	73·8	76·0	2·2	—
Widows	27·9	24·2	—	3·7	27·5	25·9	—	1·6
Widowers	7·9	7·8	—	0·1	9·5	9·4	—	0·1
Old married men	7·4	6·3	—	1·1	5·6	5·6	—	—
„ women	4·6	4·1	—	0·5	3·7	3·7	—	—
Married, 15—65	194·5	194·0	—	0·5	196·1	195·0	—	1·1
Differences	—	0·1	0·1	—	0·1	—	0·1	—
	453·0	417·3	0·1	35·8	402·0	402·4	3·2	2·8

TABLE V *Contd.—Proportions of Population per* 100 *Wives.*

	Bethnal Green.				Stepney.			
	Per 100 Wives.		Difference.		Per 100 Wives.		Difference.	
	1891.	1901.	More.	Less.	1891.	1901.	More.	Less.
Single women	60·9	67·4	6·5	—	62·0	67·3	5·3	—
„ men	66·8	69·9	3·1	—	83·2	86·8	3·6	—
Widows	24·3	24·3	—	—	25·1	23·4	—	**1·7**
Widowers	9·1	10·3	1·2	—	9·9	9·1	—	**0·8**
Old married men	5·3	4·8	—	**0·5**	4·9	4·4	—	**0·5**
„ women	3·7	3·1	—	**0·6**	3·1	2·8	—	**0·3**
Married, 15—65	197·4	196·5	—	**0·9**	198·4	199·0	0·6	—
Differences	—	**0·2**	—	**0·2**	0·2	**0·1**	—	**0·3**
	367·5	376·1	10·8	**2·2**	386·8	392·7	9·5	**3·6**

	Poplar.				Bermondsey.			
	Per 100 Wives.		Difference.		Per 100 Wives.		Difference.	
	1891.	1901.	More.	Less.	1891.	1901.	More.	Less.
Single women	53·7	62·8	9·1	—	56·3	64·0	7·7	—
„ men	72·2	78·2	6·0	—	72·4	76·6	4·2	—
Widows	21·5	22·6	1·1	—	22·9	24·0	1·1	—
Widowers	9·9	11·7	1·8	—	9·7	10·5	0·8	—
Old married men	5·2	5·3	0·1	—	4·7	4·8	0·1	—
„ women	3·0	3·3	0·3	—	3·1	3·4	0·3	—
Married, 15—65	197·2	196·6	—	**0·6**	198·5	197·6	—	**0·9**
Differences	**0·1**	—	0·1	—	**0·2**	**0·1**	0·1	—
	362·6	380·5	18·5	**0·6**	367·4	380·8	14·3	**0·9**

	Deptford and Greenwich.				Woolwich.			
	Per 100 Wives.		Difference.		Per 100 Wives.		Difference.	
	1891.	1901.	More.	Less.	1891.	1901.	More.	Less.
Single women	72·3	76·3	4·0	—	57·3	54·9	—	**2·4**
„ men	67·2	77·0	9·8	—	93·4	91·6	—	**1·8**
Widows	23·2	20·9	—	**2·3**	20·0	18·0	—	**2·0**
Widowers	9·0	9·1	0·1	—	7·9	8·1	0·2	—
Old married men	6·3	5·5	—	**0·8**	5·5	5·4	—	**0·1**
„ women	3·8	3·7	—	**0·1**	3·7	3·3	—	**0·4**
Married, 15—65	195·8	196·4	0·6	—	198·5	196·4	—	**2·1**
Differences	**0·2**	—	0·2	—	0·1	—	—	**0·1**
	377·4	388·9	14·7	**3·2**	386·4	377·7	0·2	**8·9**

The figures for 1901 in separate boroughs, conjoined above for purposes of comparison, were:—

	Fulham.	Hammersmith.	Holborn.	Finsbury.
Single women	69·2	88·5	112·7	69·6
„ men	58·3	76·0	127·3	80·6
Widows............................	21·8	26·0	32·4	26·3
Widowers	6·8	7·8	13·1	9·1
Old married men............	3·7	5·3	5·3	3·9
„ women	2·5	3·3	2·9	2·4
Married, 15—65	194·6	196·4	198·9	196·9
Differences	—	**0·1**	0·1	0·3
	356·9	403·2	492·7	389·1

	Wandsworth.	Battersea.	Deptford.	Greenwich.	Stoke Newington.
Single women	111·6	67·4	72·9	80·7	122·5
„ men	69·6	66·5	71·1	84·3	78·4
Widows............................	23·8	19·7	19·9	22·3	26·9
Widowers	8·5	7·2	8·1	10·3	8·3
Old married men............	5·7	4·2	5·1	6·0	6·8
„ women	3·7	2·9	3·6	3·9	5·1
Married, 15—65	195·7	195·4	195·7	197·2	195·0
Differences	0·1	**0·2**	**0·1**	**0·1**	—
	418·7	363·1	376·3	404·6	443·0

TABLE VI.—*Showing the Composition of the Secondary Classes (Males) in* 1891 *in certain Counties (per* 100 *" Working Males"), with London figures for* 1901.

	London.		1891 (Registration Counties).			
	1891.	1901.*	Middlesex.	Surrey.	Hertford.	Lincoln.
Conveyance, &c.—						
Railways	1·96	1·65	2·50	1·81	2·13	2·13
Roads	7·31	7·64	5·39	6·20	5·13	3·08
Storage	0·76	4·58	0·45	0·15	0·05	0·03
Messages	4·44		2·44	1·95	1·48	1·38
Retail supply—						
Houses and furniture	10·97	11·05	13·37	12·45	9·73	6·51
Food and lodging	7·94	8·69	8·38	8·37	7·20	6·02
Dress	5·64	5·21	3·66	3·49	3·36	3·44
Carriages	1·01	0·94	1·05	1·04	1·43	1·32
Other trades	7·97	7·59	7·14	6·02	6·69	6·65
Domestic and other service	4·23	3·61	2·52	2·87	2·09	0·77
Professions	4·68	4·67	5·46	4·90	3·06	2·58
Government	2·93	3·33	2·80	2·34	1·39	1·02
Indefinite	1·60	1·35	0·87	0·86	0·88	0·74
	61·44	60·31	56·03	52·45	44·62	35·67

* There are some small changes in the arrangement of the occupations, but not such as to invalidate this comparison, with the exception that in 1891 materials were not available for transferring to the commercial class the large excess of hotel keepers, &c., and railway men found in certain boroughs. This excess being restored to the secondary class, raises the section food and lodging to 8·96, that of railway carriage to 2·67, and that of domestic service to 3·78, the total being 61·77, as against 61·44 per cent. in 1891.

TABLE VII.—*Numbers of Males and Females Returned under Occupations in each of the Boroughs in* 1901, *with the Numbers of Males Aged* 15 *and Upwards not so Returned.*

	Males.		Females Working.		Males.		Females Working.
	Working.	15 and upwards not Working.			Working.	15 and upwards not Working.	
I.				III (*b*).			
London, City	10,523	609	6,612	Hammersmith	34,351	2,450	16,328
Holborn	21,539	1,661	12,454	Battersea	52,313	2,764	19,721
Westminster	63,198	5,005	46,388	Lambeth	93,504	6,693	42,226
II.				Camberwell	76,894	6,140	34,435
Southwark	68,202	3,083	28,099	Hackney	65,379	4,282	35,227
Finsbury	33,115	1,166	16,593	Stoke Newington	15,274	1,219	8,614
St. Pancras	78,125	4,578	36,186	Islington	105,974	6,613	50,911
III (*a*).				IV.			
St. Marylebone	40,704	3,201	33,008	Shoreditch	37,430	2,091	19,617
Chelsea	21,041	3,165	16,033	Bethnal Green	39,364	1,836	20,708
Kensington	45,035	5,261	46,369	Stepney	96,650	4,238	40,446
Paddington	41,626	3,446	30,203	Poplar	53,615	3,204	19,274
Hampstead	20,775	2,284	19,974	Bermondsey	41,623	1,936	16,473
Fulham	39,985	2,678	16,768	Deptford	34,006	2,163	12,741
Wandsworth	64,475	7,123	34,377	Greenwich	29,677	2,289	10,729
Lewisham	35,043	3,421	18,901	Woolwich	40,529	2,611	9,916

TABLE VIII.—*Proportions of Children under* 15 *to Wives Aged* 15—65 *in* 1901, *and ratios of Annual Births to Wives Aged* 15—45 *in the preceding Twenty Years and in* 1900-01.

	1901. Children 0—15 to 100 Wives 15—65.	To 100 Wives Aged 15—45.						
		Average Total Births Ten Years.		Legitimate Births.		Total Births.		
		1881-90.	1891-1900.	1880-81.	1890-91.	1880-81.	1890-91.	1900-01.
Bethnal Green	214·3	31·0	29·4	30·7	29·3	31·3	29·8	28·3
Stepney	211·1	29·5	30·6	29·3	29·4	30·1	30·0	29·5
Bermondsey	206·5	29·5	29·1	30·0	28·5	30·6	29·0	27·3
Poplar	204·3	29·6	28·5	29·5	28·1	30·2	28·6	28·2
Shoreditch	196·1	28·8	27·8	28·6	26·8	29·7	27·7	27·2
Deptford and Greenwich	191·2	28·7	25·7	28·8	25·8	29·8	26·5	24·4
Camberwell	188·5	27·9	24·9	28·1	25·1	29·0	25·9	22·8
Southwark	185·1	27·3	26·2	26·9	25·4	27·9	26·1	25·2
Woolwich	181·6	27·0	23·6	27·7	25·6	28·5	26·2	21·8
Hackney	180·6	27·1	24·8	28·3	24·8	29·1	25·7	23·3
Wandsworth and Battersea	176·5	27·4	22·8	27·5	24·4	28·4	25·1	21·6
Fulham and Hammersmith	176·0	27·3	24·1	27·9	24·0	29·0	25·0	22·5
Lewisham	175·1	26·3	20·6	27·2	23·1	27·9	24·1	20·8
Holborn and Finsbury	174·0	28·2	27·4	28·0	26·9	28·7	27·4	27·1
Lambeth	169·0	27·7	26·0	27·2	25·3	28·4	26·6	24·3
Islington	166·2	26·1	23·4	26·9	23·6	27·9	24·3	21·7
St. Pancras	163·8	25·5	23·5	25·4	23·0	26·7	24·1	21·5
Chelsea	154·8	27·5	23·0	26·6	22·7	28·1	23·9	20·6
Hampstead	154·4	24·1	19·8	25·3	21·7	26·1	22·2	18·3
London, City	153·0	22·0	18·7	23·3	21·2	23·8	21·6	16·4
Kensington	151·5	23·8	21·3	24·3	21·5	25·5	22·6	20·1
Paddington	149·3		22·0		21·5		22·7	20·3
St. Marylebone	146·9	28·2	28·0	24·7	23·5	28·8	28·0	27·6
Westminster	131·7	22·3	19·4	22·7	20·1	23·8	21·0	17·4
Average	171·1	27·2	25·1	27·2	25·0	28·3	25·9	23·6

APPENDIX.

Concerning Women Aged 15 *to* 25 *Years.*

It occurred to me that a useful inquiry might be instituted, in the absence of local statistics as to birth-places, into the occupations of single women at the age 15 to 25 (which is greatly influenced by migrations) in each of the metropolitan boroughs. The females counted for the county of London at this age were 493,478 in number, divided thus:—

	Single.	Married and Widowed.
Female inhabitants	419,662	73,816
Viz.—		
Domestic servants (not inn), in-door	115,952	588
Teachers	7,219	36
Commercial clerks	12,117	46
Drapers, &c.	7,672	24
Other occupations	174,371	7,929
Total employed	317,331	8,623
Not returned under occupations	102,331	65,193

We have the number of persons at this age, single or married, in each borough, and the total numbers employed, so that it is only necessary to distribute by estimation the 8,623 married women who are employed, in order to arrive at an approximate number of unemployed single women in each borough. As respects the workers, so large a proportion are single that it is hardly necessary in a table of absolute ratios (in proportion say to 100 married women in each borough aged 15 to 65) to distinguish the married.

The first result which emerges, rather unexpectedly, is an immense variation in the proportions of single women unemployed, thus:—

	Per Cent. Unemployed.		Per Cent. Unemployed.		Per Cent. Unemployed.
Woolwich	38·5	Camberwell	28·7	Holborn	19·9
Greenwich	35·1	Hampstead	26·6	Southwark	19·3
Lewisham	33·6	Poplar	25·3	St. Marylebone	18·0
Wandsworth	33·4	Hackney	24·0	Stepney	17·7
Deptford	32·2	Islington	23·9	City of London	16·9
Hammersmith	31·0	Paddington	22·9	Westminster	15·7
Fulham	29·7	St. Pancras	22·7	Finsbury	14·8
Lambeth	29·3	Kensington	22·4	Bethnal Green	11·5
Stoke Newington	29·2	Chelsea	22·3	Shoreditch	11·5
Battersea	29·0	Bermondsey	20·9		

The *relative* numbers being discordant, I have calculated the absolute ratios of the unemployed per 100 wives aged 15 to 65, and the result is below :—

	Women Aged 15—25 Unemployed.			Women Aged 15—25 Unemployed.	
	Single.	Married and Widowed.		Single.	Married and Widowed.
Hampstead	26·3	6·0	St. Marylebone	13·2	8·1
Lewisham	21·3	6·5	Fulham	12·8	8·5
Wandsworth	20·8	6.8	Battersea	12·8	7·9
Stoke Newington	19·6	6·5	Westminster	12·2	6·9
Kensington	19·2	6·9	Islington	12·0	8·4
Greenwich	17·5	8·4	Holborn	11·9	8·6
Hammersmith	15·7	8·2	Poplar	11·7	9·6
Paddington	15·4	7·7	St. Pancras	10·9	8·9
City of London	15·2	4·0	Bermondsey	9·7	9·2
Deptford	15·1	8·4	Stepney	8·7	12·0
Camberwell	15·0	7·3	Southwark	8·2	10·0
Lambeth	14·8	8·2	Finsbury	7·0	9·6
Woolwich	14·6	9·9	Bethnal Green	5·8	10·4
Chelsea	14·6	7·0	Shoreditch	5·6	10·2
Hackney	14·2	8·2			

It will be observed that the five highest boroughs in this table are residential, with low proportions of young wives; the six lowest are industrial, with high proportions of young wives.

I should like to see a table showing how many of the unemployed single women aged 15—25 lived in tenements of one or two rooms, and how many of these were living with married women. The results would I fancy be striking, and the contrasts remarkable as between one borough and another.

I venture to assume that the following boroughs (with Bethnal Green and Shoreditch) are the most industrial and poorest, and that in them not much more than six single women of the age of 15—25 can fairly be expected to be counted as adjuncts (unemployed) of families. If so, there will be surplus idle women, not so accounted for, as follows:—

	Per cent.			Per cent.	
In Poplar	5·7, or	1,645 persons	In Southwark	2·2, or	805 persons
„ Bermondsey	3·7 „	823 „			
„ Stepney	2·7 „	1,336 „	„ Finsbury	1·0 „	175 „

If we assume, as I think we may, that the remaining boroughs might each be expected to show a proportion of idle unmarried women bearing some relation to the number of families in fair circumstances, we may find it useful to bring the following data, as to the proportion of female servants aged 15—25 to a hundred wives aged 15—65, into comparison with the figures in the last table:—

	Women Aged 15—25.			Women Aged 15—25.	
	Domestic Servants.	Unoccupied (Single).		Domestic Servants.	Unoccupied (Single).
Hampstead	54·9	26·3	Hammersmith	13·5	15·7
Kensington	46·6	19·2	Hackney	13·2	14·2
Westminster............	33·9	12·2	Lambeth	13·2	14·8
St. Marylebone	31·2	13·2	Holborn	12·2	11·9
Chelsea	30·8	14·6	Fulham	12·1	12·8
Paddington	29·3	15·4	Deptford	11·6	15·1
Lewisham	27·0	21·3	St. Pancras	10·9	10·9
City of London	25·3	15·2	Camberwell	10·8	15·0
Wandsworth	24·1	20·8	Islington	10·7	12·0
Stoke Newington	21·8	19·6	Woolwich	9·8	14·6
Greenwich	17·8	17·5	Battersea	8·9	12·8

In the seven other boroughs the ratio of domestic servants ranged from 5·7 down to 3·5 only, per hundred wives.

I think we may assume that the following boroughs show excessive numbers of idle young women, on the theory that the number of such women ought not to be more than nine-tenths that of female domestic servants (not inn servants) of the same age:—

	Per cent.			Per cent.	
Greenwich........	2·0, or	317 persons	Deptford	4·7, or	924 persons
Hammersmith	3·5 „	684 „	St. Pancras	1·0 „	407 „
Hackney	2·3 „	852 „	Camberwell	5·3 „	2,352 „
Lambeth	2·9 „	1,532 „	Islington	2·4 „	1,413 „
Holborn............	0·9 „	84 „	Woolwich	5·8 „	1,215 „
Fulham	1·9 „	486 „	Battersea	4·8 „	1,490 „

If we deduct the numbers just recited from the totals of unoccupied single women, we arrive at the following ratios in lieu of those shown in the first table above. It will be recollected that these are ratios calculated on the numbers of single women aged 15—25.

	Per Cent. Unemployed Remaining.		Per Cent. Unemployed Remaining.		Per Cent. Unemployed Remaining.
Lewisham	33·6	Kensington	22·4	City of London	16·9
Wandsworth	33·4	Chelsea	22·3	Westminster........	15·7
Greenwich	31·0	Deptford	22·2	Southwark	14·2
Stoke Newington	29·2	St. Pancras	20·6	Poplar	13·0
Hampstead	26·6	Hackney	20·1	Bermondsey	12·9
Fulham	25·2	Islington	19·1	Finsbury	12·6
Hammersmith ...	24·1	Camberwell	18·6	Stepney................	12·2
Lambeth	23·5	Holborn	18·4	Shoreditch	11·5
Woolwich	23·2	Battersea	18·1	Bethnal Green...	11·5
Paddington	22·9	St. Marylebone....	18·0		

Of course this table is hazardous, but I submit it is not an unreasonable one. It represents the probable numbers of respectable young women living with their relatives.

It remains for me to show how the women aged 15—25 were employed, and for that purpose I will rank them in the order of the ratio of their total number (employed and unemployed) to that of wives aged 15—65. The object of the table being to show which are the occupations which attract immigrants of this sex and age, there is here no need to discriminate between primary and secondary occupations.

	To 100 Wives Aged 15—65.										
	Persons over 15 Years.	Females Aged 15—25.	Domestic (not Inn).	Teacher.	Commercial Clerk.	Draper.	Dress.	Laundry.	Food.	Paper Box, Bag, Bookbinding.	Other Occupations.
Hampstead	526·2	105·3	54·9	2·0	2·1	1·7	5·1	0·7	1·4	0·1	4·8
London City	623·8	96·0	25·3	1·1	3·1	1·5	9·4	0·2	17·3	2·0	17·0
Kensington	516·8	93·7	46·6	1·1	1·5	1·2	6·2	4·2	1·6	0·1	5·0
Westminster	543·7	85·6	33·9	0·7	1·7	1·7	11·1	0·9	4·5	0·6	11·5
St. Marylebone	503·7	82·7	31·2	0·9	1·6	2·9	14·5	0·8	2·5	0·3	6·7
Paddington	465·4	75·8	29·3	1·1	2·1	2·0	9·3	1·8	2·1	0·2	4·7
Stoke Newington	443·0	74·6	21·8	1·4	3·0	1·2	11·0	1·3	2·0	0·7	6·0
Chelsea	492·2	73·0	30·8	0·7	1·5	1·5	8·9	0·9	2·1	0·1	4·9
Lewisham	417·3	70·4	27·0	1·5	2·0	1·4	4·3	2·0	1·1	0·1	3·2
Holborn	492·7	70·0	12·2	0·5	1·9	0·4	7·9	1·0	5·1	2·6	18·0
Wandsworth	418·7	69·8	24·1	1·4	1·8	1·2	4·8	3·1	1·3	0·4	4·2
Hackney	411·1	68·7	13·2	1·3	2·3	1·0	13·1	2·0	3·1	1·8	8·5
Stepney	392·7	62·6	5·5	0·7	0·7	0·3	18·1	0·8	6·7	1·6	7·7
Bethnal Green	376·1	62·1	3·7	0·2	0·4	0·3	15·6	0·9	4·3	6·0	14·5
Camberwell	395·9	61·0	10·8	1·2	2·1	1·1	9·7	3·8	3·1	1·2	5·8
Shoreditch	387·2	60·9	3·5	0·2	0·5	0·4	14·6	1·7	3·6	6·7	13·9
Hammersmith	403·2	60·2	13·5	1·1	1·8	1·1	6·4	6·1	1·9	0·1	4·3
Islington	402·4	59·8	10·7	1·0	2·3	1·1	9·5	1·9	2·7	1·8	8·4
Lambeth	402·4	59·6	13·2	1·0	2·1	1·0	7·0	2·2	2·8	1·4	6·1
Greenwich	404·6	59·0	17·3	1·2	1·0	1·1	4·5	1·4	1·3	0·1	5·3
Finsbury	389·1	58·5	5·0	0·2	1·0	0·3	9·1	1·2	4·1	6·7	14·4
St. Pancras	413·6	58·0	10·9	0·8	1·7	0·9	8·8	1·4	3·3	0·9	9·5
Bermondsey	380·8	57·1	4·6	0·6	0·9	0·4	9·8	1·6	5·8	2·7	11·8
Poplar	380·5	57·1	5·7	0·9	0·8	0·5	10·8	0·8	5·7	1·5	9·0
Deptford	376·3	56·2	11·6	1·1	1·5	0·9	6·8	1·8	2·6	0·5	5·8
Southwark	378·0	54·1	4·8	0·5	1·0	0·7	8·2	1·6	5·1	4·2	9·7
Battersea	363·1	52·9	8·9	1·1	2·0	0·9	7·7	3·7	2·2	0·9	4·7
Fulham	356·9	51·4	12·1	0·8	1·4	0·9	6·2	4·1	1·5	0·1	3·3
Woolwich	377·7	48·3	9·8	1·2	0·8	1·1	5·6	1·1	1·5	0·1	2·7

In explanation of the considerable numbers of persons employed in "other occupations" in certain boroughs, it may be stated that the following proportions were employed in the manner shown:—

	Proportions per 100 Wives in		
	London, City.	Holborn.	Westminster.
Domestic servants, in-door (in hotels, lodging, eating houses) ...	6·9	6·1	5·2
Professional persons (except teachers and nurses)...................	0·4	2·2	1·1
Sick nurses and invalid attendants....	1·6	0·9	0·4

	Proportions per 100 Wives in				
	Bethnal Green.	Shoreditch.	Finsbury.	Bermondsey.	Southwark
Miscellaneous metal trades........	0·3	0·6	0·7	2·4	0·6
Working in skins, hair, and feathers........	2·9	2·6	2·4	1·7	0·9
Working in wood, furniture, &c.	3·1	2·0	1·0	0·5	0·5
Envelope, stationery manufacture	1·2	1·4	1·5	0·9	1·2
Textile manufacture (mixed or undefined materials)	1·7	1·3	1·1	0·4	0·4

I must admit that the table of occupations surprises me. I was prepared to find many barmaids (classed under workers, dealers in food, drink, &c.) and hotel servants in the City of London and in Holborn, but I did not suppose this was practically the only exception to the rule that ordinary domestic service is the chief attraction, almost the only one for immigrants. I expected to find larger numbers in the drapers' and mercers' shops. To be sure there are the dressmakers' workrooms in St. Marylebone, Westminster, and other places which attract immigrants, but there are still higher ratios of dressmakers in boroughs which are doing the reverse.

Here it should be noticed that beyond doubt there has been an important total of female migration *from* such boroughs as Stepney, Bethnal Green, Shoreditch, Poplar, Bermondsey, and Southwark,[14] but not from Woolwich. On the other hand, there must have been some immigration into Woolwich on balance, and as we are all cognizant of the foreign population which has settled in Stepney, it follows that we must add the amount of such foreign immigration to the net loss of inhabitants in that borough, if we would arrive at its actual loss of native inhabitants. This loss might amount amongst females at age 15—25, to from 10 to 25 per cent. of those who would have survived supposing no migrations had taken place in the six boroughs just named. We may conclude then that below the first twelve places shown in the table immigration has in most cases been more than balanced by outward migrations, even at age 15—25, which is emphatically the age of immigration. At other ages we know London City, Westminster, St. Marylebone, Chelsea, and Holborn have lost heavily. The facts as to Woolwich and Fulham seem to demand special study, as these places are at the bottom of the scale, without obvious reason. Both boroughs are still attracting population, and in both the high proportion of married women rather tends to dwarf the relative number of single women, and really accounts for their ranking low.

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[14] Finsbury might present like characteristics, but this borough does not correspond with a registration district or districts, hence its progress cannot so well be followed.

I think the following figures are not far from the truth as to migration in 1891-1901 :—

Females. Age in 1901.	Counted in 1891.		Of whom there probably Survived in 1901.		Counted in 1901.		Net Immigration in Ten Years.	
	Woolwich.	Fulham.	Woolwich.	Fulham.	Woolwich.	Fulham.	Woolwich.	Fulham.
15—20....	6,091	5,749	5,878	5,549	5,677	6,246	201*	697
20—25....	5,303	4,736	5,091	4,546	5,891	6,915	800	2,369
25—30....	4,600	4,113	4,370	3,907	5,793	7,200	1,423	3,293
30—35....	4,685	4,679	4,399	4,394	5,135	6,615	736	2,221
35—40....	4,557	4,795	4,223	4,445	4,370	5,388	147	943
40—45....	3,833	4,181	3,473	3,788	3,565	4,442	92	654

* Emigration.

These figures are rendered somewhat doubtful because of the uncertainty we are in as to the correctness of the returns of ages,[15] but may be accepted as showing that many of the female inhabitants counted in 1901 had immigrated during the preceding ten years. If the ages of immigrants were before us we could form a better opinion, and a quinquennial census of *ages* would immensely assist us in detecting the effect of mis-statements.

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[15] The number of domestic servants at this age, 15—25, in Fulham (3,091) compares with 3,066 immigrants shown above; but as there are 2,055 servants in Woolwich, if these are all or nearly all immigrants, there must have been an exodus of girls born in Woolwich.

DISCUSSION *on* MR. WELTON'S PAPER.

MR. R. HENRY REW was sure everyone would be struck with the enormous amount of work that the author had put into the paper, and the thorough way he had examined the problems with which he dealt. He was not in any way prepared to discuss the paper, but he might venture to suggest that there might be some risk in assuming without considerable qualification that the characteristics of particular parts of London were indicated by the occupations of the persons who were returned as residing therein. Southwark, for example, was returned as having the largest number of printers and lithographers, but he should think that Southwark could hardly be taken as representing the principal location of the printing trade in London. He believed the printing industry was carried on north of the Thames to a still greater extent, though no doubt people employed on this side of the river lived on the other side. The same consideration might apply to other trades in London, where people probably lived away from their places of occupation to a greater degree than they did in many other parts of the country. It might possibly therefore be somewhat misleading to try to locate too definitely from these figures particular industries in different parts of the metropolis.

Mr. A. H. BAILEY, F.I.A., asked if the terms "primary" and "secondary" occupations were not somewhat misleading. He did not find any definition of the expression in the paper, but he concluded it had no reference to the relative positions of employer and employed.

Mr. JOHN SHAW suggested perhaps the terms "productive" and "non-productive" would better express the author's meaning than those of primary and secondary.

The CHAIRMAN (Mr. E. W. BRABROOK) observed that Mr. Welton's studies of the phenomena of the census now went back for a considerable number of years. He had rendered public service by the analyses he had given of successive census returns, and also by the ingenious forms of comparison he had devised in order to get at the facts which he had marshalled with so much labour and skill in this paper. Taking, for instance, a community of 100 male workers, he gave in a compendious and interesting form figures which conveyed to the mind a much more clear idea than could be conveyed by any long columns of aggregate numbers. In like manner the ingenious and suggestive arrangement of taking the married women between 15 and 65 as the unit, brought out with great force some curious and interesting circumstances. He (the speaker) confessed it surprised him to find that, taking the married women between those ages, the average number of children to each married woman was something under two. He should have thought, *primâ facie*, it would have been more. The paper also showed—what was perhaps not so deplorable from every point of view—that the ratio was decreasing rather than increasing. That opened up a number of social questions which he would leave to be developed further by those who were disposed to take up the subject in the future. Another point of considerable interest was the statistics with regard to the employment of women. That was a subject into which a committee of the British Association, with which he himself was concerned, was making some inquiry. He might say that the details which Mr. Welton had collected would be useful to that committee, especially if it were possible for him to supplement them by similar particulars relating to previous censuses. If such particulars happened to be in Mr. Welton's possession, he would, he was sure, be rendering great service to that committee if he would allow them the use of his collections. He presumed that the fact that Mr. Welton's paper had not given rise to any more active discussion on this occasion was due to the circumstance that the subject had been dealt with in such a masterly manner that it did not lend itself to much criticism. It was moreover a subject which required careful study before anyone could possibly pretend to be ready to discuss it. He concluded by moving that the thanks of the Society be given to Mr. Welton for his excellent paper.

Mr. T. A. **Welton** in reply observed that he believed Mr. Rew's point was a good one; but one of his objects in writing this paper had been rather to challenge all that and to induce people who lived in the various localities to point out the corrections required. One could only make a beginning in a matter of this description. He had in various parts of the paper pointed to the fact that plenty of people worked in one part and lived in another. As regards Mr. Bailey's question, he had thoroughly threshed out the distinction between primary and secondary occupations in a paper recently read before the Manchester Statistical Society. The term "primary" occupations related to such occupations as agriculture and mining, to everything in fact that developed the natural powers of the soil or of the situation; while the "secondaries" were the butchers, bakers, doctors, and all those people who were simply there because they were wanted by the community, and not because there was a special field for them in that particular place. Mr. Shaw, he thought, was wrong in suggesting that he said that "secondaries" were not productive. Some of them were very useful indeed and, after all, what was production? Everything that produced comfort was good and was production. He would refer Mr. Brabrook and others who were interested in the point, to a paper which he had contributed some few years ago to the transactions of the Manchester Statistical Society. There the occupations existing in the years 1851 and 1891 were compared with a view to showing what occupations had arisen in that period, what occupations had died out, and what changes had occurred. The whole were marshalled in categories of that kind, and female occupations were dealt with with great particularity.

MISCELLANEA.

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I.—*Wool Prices in Great Britain*, 1883-1901.

By R. J. THOMPSON.

WOOL, in common with most other articles of agricultural produce, has undergone in recent years a considerable depreciation in price, and in view of the importance of this commodity in the trade of the United Kingdom, some account of the fluctuations which have been recorded in the value of the principal descriptions may not be without interest. A comparison such as is here suggested will also afford an opportunity of indicating the extent to which British varieties have suffered as compared with those grades which now constitute the bulk of the wool consumed in this country.

As the price of each kind primarily depends on certain natural characteristics, which differentiate it from other kinds, the most exact method of measuring the changes will perhaps be to express the annual average price as a ratio or percentage of the value in certain selected years. The mean of the average prices in the three years 1883-85 has therefore been chosen as a convenient starting point and basis of comparison. At that period wool and commodities generally had fallen very considerably from the level of the sixties, and seem to have reached a point with which subsequent years may fairly be compared. The variations from this standard can easily be seen, and the relative depreciation of each class accurately measured.

The descriptions of wool on the market, each with its own peculiar characteristics, are very numerous, but I have endeavoured to make a selection which should be typical of the two great classes, viz., merino and cross-bred, and have also included the principal home-grown kinds. The price of merino wool is illustrated by four varieties, viz., Port Philip, average fleece; Port Philip grease, good average; Adelaide, average grease; and Cape Eastern. For cross-bred, two sorts of Australian, medium and coarse, have been taken, and with these English half-bred and

Down wool are contrasted. Lustre wool is represented by Lincoln and Leicester; and, in addition, the produce of the Cheviot and Blackfaced breeds of sheep, though not of great commercial importance, is included, as being of considerable interest in this country.

The first place must be given to merino, the finest stapled and most valuable class of wool, and also that which is most widely produced. It comprises the production of a large proportion of the flocks of Australasia, the Cape, and the River Plate; and in the early years of the period under review it was almost the only sort of wool imported into the United Kingdom from those countries. The following table shows the average annual prices, quoted by the *Bradford Observer*, of the varieties named above:—

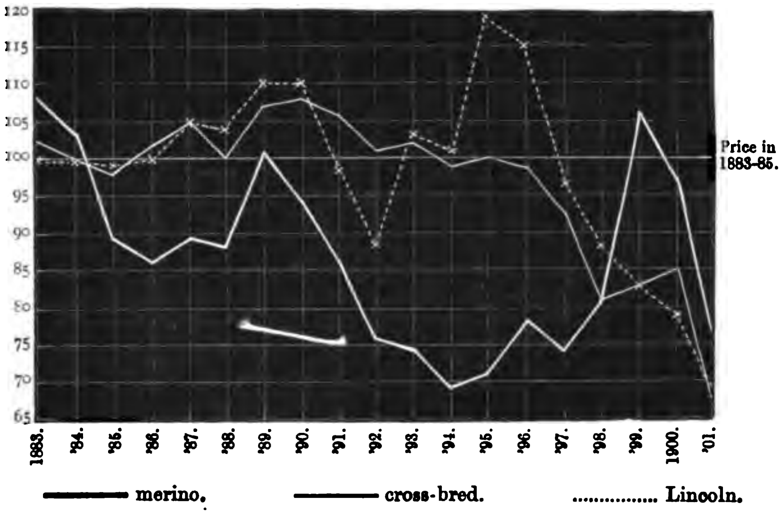
TABLE 1.—*Price of Merino Wool.*

	Annual Average Price per lb.				Percentage of Price in 1883-85.				
	Port Philip Fleece, Average.	Port Philip Grease, Good Average.	Adelaide, Average Grease.	Cape, Eastern, Average.	Port Philip Fleece, Average.	Port Philip Grease, Good Average.	Adelaide, Average Grease.	Cape, Eastern, Average.	Mean of these Four kinds.
	d.	*d.*	*d.*	*d.*					
1883	19	12⅛	8½	11¼	106	108	109	110	108
'84	18¼	11½	8⅛	10⅜	102	103	104	102	103
'85	16½	10	6¾	9	92	89	87	88	89
'86	15½	9¾	6¾	8¾	86	87	87	86	86
'87	15¾	10⅛	7	9	88	90	90	88	89
'88	15¾	10¼	7	8⅝	88	91	90	84	88
'89	17¼	11½	8¼	10⅛	96	103	106	99	101
1890	16	10¾	7½	9½	89	96	96	93	94
'91	14¾	10	6⅞	8¾	82	89	88	86	86
'92	13	8¾	6	7¾	73	78	77	76	76
'93	12¾	8⅝	6	7¾	71	77	77	76	75
'94	11¾	8	5⅜	7⅜	66	71	69	72	69
'95	12	8⅜	5⅝	7	67	75	72	69	71
'96	13	9⅜	6⅜	7½	73	83	82	73	78
'97	12¼	9¼	6	7⅛	68	82	77	70	74
'98	13¼	9¾	6⅝	8⅛	74	87	85	80	81
'99	17¼	12¼	8½	11	96	109	109	108	106
1900	15¾	11½	7⅞	9¾	88	103	101	95	97
'01	13	9½	6⅜	7	73	85	82	69	77

Buenos Ayres wool is another variety of merino to which prominence might be given, but it has not been much imported into this country, most of it going to the Continent. All these prices followed practically the same course, and their fluctuations are shown in the diagram by a curve which represents the general percentage or index-number of these four wools together. From 1883 to 1886 there was a fall, then a rise to 1889, followed by a serious and long-continued period of depression which lasted until 1899. One of the causes which probably contributed to this

Diagram showing the Average Price from 1883-1901 *of Merino, Cross-Bred, and Lincoln Wool.*

100 = average price in 1883-85.



decline was the rapid increase between 1883 and 1893-94 in the flocks of Australia, New Zealand, and the Cape. The numbers in these colonies are given in the following table, which is based on official figures, supplemented by estimates for those years in which one or other of the Australian colonies failed to record their stock :—

TABLE 2.

Year.	Number of Sheep in			Year.	Number of Sheep in		
	Australia.	New Zealand.	Cape Colony and Natal.		Australia.	New Zealand.	Cape Colony and Natal.
	Millions.	Millions.	Millions.		Millions.	Millions.	Millions.
1883–85	66·3	14·0	—	1892–94....	101·2	19·4	17·2
'86–88	76·9	16·6	13·7	'95–97....	88·3	19·5	15·5
'89–91	96·7	16·5	15·4	'98–1900	74·3	19·5	13·2

The flocks in Australia increased from 66 millions in 1883-85 to 101 millions in 1892-94, or by about 50 per cent. In 1895, however, the numbers began to be affected by the drought, and since that date the depletion has been very great, until in 1900 the total had receded to the level recorded in 1883. The figures for the Cape have also fallen, but no decline has occurred in the case of New Zealand, though the total has been nearly stationary since 1892-94. The exports, which expanded very greatly up to 1895, naturally began to diminish; but apart from the variation in the size of the Colonial flocks, there was an important change going on in the sheep-breeding industry during this period which greatly affected the price of merino. This was the partial substitution of cross-bred for fine wool. The low prices current after 1889 had led flock owners, both in Australasia and in Argentina, to seek for some means of making the industry more profitable. The export of frozen or chilled meat, owing to improved arrangements for transit, afforded a more advantageous means of disposing of the carcase than the old method of boiling down, but the mutton from the small merino sheep was found unsuitable for the English market. In order to meet this difficulty, the practice of cross-breeding with some of the larger English varieties, such as Lincoln, Leicester, Romney Marsh, Shropshire, &c., was largely resorted to, and the extent to which it prevailed is indicated in the following estimate by Messrs. Helmuth, Schwartze, and Co. of the proportions of merino and cross-bred clean wool imported into Europe and North America from the Colonies and the River Plate during the years 1889-1901:—

TABLE 3.—*Imports of Clean Wool into Europe and North America from the Colonies and the River Plate.*

Year.	Imports.			Proportion of	
	Merino.	Cross-Bred.	Total.	Merino.	Cross-Bred.
	Millions of lbs.	Millions of lbs.	Millions of lbs.	Per cent.	Per cent.
1889........	355	74	429	83·8	16·2
'91........	380	82	462	82·3	17·7
'93........	382	115	497	76·9	23·1
'95........	396	184	580	68·3	31·7
'96........	374	198	572	65·4	34·6
'97........	354	232	586	60·4	39·6
'98........	339	240	579	58·5	41·5
'99........	315	266	581	54·2	45·8
1900.......	248	255	503	49·3	50·7
'01........	308	285	593	51·9	48·1

The change in the character of the receipts from South America was probably even more striking than in the case of Australasia, for it is estimated by the same authority that whereas they were at one time entirely merino, the proportion of this class in the native exports of Argentina in 1901 was barely 25 per cent., and in those of Uruguay about 80 per cent., which it is stated makes the ordinary composition of the River Plate clip about 33 to 35 per cent. merino.

The production of fine wool may be said generally to have largely increased up to about 1894-95, since when it has been limited both by the reduction in the flocks and the extension of cross-breeding. Comparing the merino production in Table 3 with the general index-number shown in Table 1, it seems not unreasonable to assume that the rise in the supply and the fall in price were intimately connected. The increase from 355 million lbs., which was itself probably much above the total of the years preceding 1889, to 396 million lbs. in 1895, was accompanied, it will be seen, by a fall in the percentage price from, say, 94 on the three years 1888-90, to about 70 in 1894-95. After this date, with the limitation in the quantity available, there was an improvement, which in 1898 brought the index-number up to 81. In the following year the decline from the level of 1895 amounted to 80 million lbs., and at this point it seems tolerably clear that the shortage began to be felt. From March, 1899, till the end of the year prices advanced very rapidly. Port Philip superfine greasy, which stood at *1s.* in January, fetched *1s.* 5½*d.* a pound in December, while as much as *2s.* 9½*d.* a pound was recorded for extra quality scoured, the increase during the year being on the whole about 50 to 60 per cent. The rise, however, was not maintained, though the annual prices only averaged about 8½ per cent. less in 1900. In 1901 the heavy fall which really took place in the latter part of 1900 becomes apparent in the yearly figures, and the period we are considering closed with prices about 23 per cent. below the standard of 1883-85. The precise cause of this decline is not altogether obvious, but I am inclined to think that a suggestion made in the *Bradford Observer* affords what is probably the true explanation, viz., that the high values caused the trade to employ the coarser cross-bred wools in place of the more expensive variety; for it is important to recollect that the shortage was solely confined to merino, and did not extend to wool generally. The falling off in the supply in 1900 seems to have been due to a disinclination to buy at inflated prices, and to an apparent absence of demand. If this solution is correct, the record forms a rather interesting object lesson of the difficulty of maintaining any substantial rise in the price of a raw material or its manufactured product. In this case, although the supply was undoubtedly limited, and could not in the nature of things be immediately increased to meet the demand, the employment of coarser wools in the place of fine merino quickly reduced prices to a level actually below that of the previous three years.

We now come to the Colonial and River Plate cross-bred wools. It is the importation of this grade which has a specially depressing effect on English prices, for it is stated that among the enormous quantities received almost every kind is to be found, except pure lustre and long coarse Cotswold wools. Moreover, the supply has rapidly increased, as we have already seen, growers having found that by crossing their merino stock with English breeds, a fleece is produced which weighs more than the merino, though fetching less money per pound, and in addition there is a marketable mutton carcase, whereas the pure fine wool sheep is worth next to nothing for meat This point is becoming more and more the controlling factor, and the sheep farmer, instead of being solely a wool grower, is devoting his attention also to meat production. It must be remembered too that the Colonial cross-bred flocks, which are the offspring or descendants of pure-bred animals exported from this country, have been improved from the point of view of wool production by an admixture of merino blood, and this makes their wool a very severe competitor to the home-grown article.

I have taken the price of medium and coarse cross-bred recorded by Messrs. Helmuth, Schwartze, and Co., as typical of these Colonial wools, and the price of half-bred and Southdown wools quoted by the *Economist* as illustrating the course of English prices. Down wool, it may be observed, is said to form only a small proportion of the domestic clip. Compared with fine Colonial produce it lacks felting quality, and is therefore chiefly employed for hosiery and flannels. Fine and good medium cross-breds are its principal competitors, and it has consequently been included in this group. The average annual figures are given in the following table:—

TABLE 4.—*Price of Cross-Bred, Half-Bred, and Southdown Wool.*

Year.	Average Annual Price per lb.				Percentage of Price in 1883-85.				
	Australian Cross-Bred, Average Medium Grease.	Australian Cross-Bred, Average Coarse.	English Half-Bred.	South-down.	Australian Cross-Bred, Average Medium Grease.	Australian Cross-Bred, Average Coarse.	English Half-Bred.	South-down.	Mean of these Four kinds.
	d.	*d.*	*d.*	*d.*					
1883	8⅘	8⅝	9⅞	12⅜	94	99	105	108	102
'84	9½	8⅞	9¼	11⅜	102	101	98	99	100
'85	9¾	8¾	9⅛	10⅝	104	100	97	93	98
'86	9½	9	10⅛	11	102	103	107	96	102
'87	9⅞	8⅞.	10⅝	11½	106	101	113	100	105
'88	9½	8½	10	10¾	102	97	106	94	100
'89	10⅓	9 5/16	10⅝	11⅜	111	107	113	99	107
'90	10⅕	8 11/14	11⅛	12	109	101	118	105	108
'91	10 1/10	9	10⅜	11¾	108	103	110	103	106
'92	9 1/10	8⅝	10	11½	97	99	106	100	101
'93	9 9/14	8 11/14	9⅞	11¼	103	101	105	98	102
'94	8 13/14	8½	10⅛	10⅞	96	97	107	95	99
'95	9	8 6/7	10⅛	10⅝	97	101	107	93	100
'96	9⅐	9	10	10¼	98	103	106	89	99
'97	8 7/10	8½	9¼	9⅝	93	97	98	84	93
'98	7½	7	8¼	9	80	80	88	78	81
'99	8½	7	7⅝	9⅜	91	80	81	82	83
1900	8⅜	7	7¾	10	90	80	82	87	85
'01	5⅞	5¼	7⅜	8¼	63	60	78	72	68

The price of these four wools has been combined to form an index-number which may be taken to represent approximately the price of cross-bred Colonial wool and those British grades which can be classed with it. This index-number is shown on the diagram, and it will be seen that it presents some very different characteristics to the merino curve. The estimate of the imports of cross-bred wool given in Table 3, to which reference may again be made, shows that we have to deal here, not with a diminishing, but with a constantly increasing supply. In 1889 the receipts of clean cross-bred wool from the Colonies and the River Plate in Europe and North America were estimated at 74 million lbs. In 1893 they had risen to about 115 millions, in 1896 to 198 millions, and in 1901 to 285 millions, that is to say, the supply was four times greater than it had been twelve years earlier. Returning to Table 4, it will be seen that the price of medium qualities was maintained, on the whole, above the average up to 1893, or taking the four qualities together up to 1896, and it may perhaps be assumed that up to that date the extension in the supply was not materially in excess of the requirements of the market at that time. Some support for this statement may be found in the fact that in 1895 the gross imports of wool into the United Kingdom were the largest on record, and in the two succeeding years they were also very heavy. The continued enlargement in the quantity of cross-bred thrown upon the market began, however, to affect prices in 1897, when a distinct fall was recorded in all varieties. The increasing abundance of coarse wools, which is said to be a noticeable feature of the past few years, was also an important factor in depressing the price. Medium cross-bred, the finer qualities of which have more of the merino character, participated in the rise in 1899. Other varieties increased in sympathy towards the close of the year, but the annual average was not much affected. The support received from the shortage and high price of merino kept values up in 1899 and 1900, but in 1901 a further considerable drop occurred, leaving them 35 to 40 per cent. below the 1883-85 price. On the whole, it will be seen that the value of cross-bred wool has declined steadily since about 1896, while the supply has as steadily increased.

Reference must be made here to the effect which the changes in the American tariff have exercised on the demand for wool. The duties in 1883 amounted to 10 cents per lb. for greasy wool, with double and treble duty when washed or scoured. In 1890 these rates were increased to 11 and 12 cents, but in 1894 wool was allowed to be imported free, and this was continued until July, 1897, when the old duty was reimposed. During the period of "free wool," the imports, as will be seen, were very large.

Average Quantity of Raw Wool Annually Imported into the United States.

	Million lbs.		Million lbs.
1889–91	121	1898–1900	122
'92–94	125		
'95–97	263	1901	104

In addition to this raw wool, there was a considerable importation of manufactured goods, which has also declined, so that it seems not unreasonable to regard the United States as a considerable factor in preventing the increasing supplies of cross-bred from more materially depressing the market prior to 1897.

The price of English half-bred wool was even better maintained than that of Australian cross-bred, and it will be seen that it did not begin to fall until 1898. As this constitutes a considerable proportion of the English clip, farmers in this country seem to have fared better than their Colonial brethren. Southdown declined persistently from 1893, though there was a recovery in 1900 in sympathy with merino.

The third class to which reference may be made is the Pure

Lustre, a wool with a shiny and lustrous appearance, the produce of the Lincoln breed. The price of this description has been recorded for many years, it being at one time regarded as a peculiarly characteristic English kind. In the course of the century considerable fluctuations have been exhibited; for instance, in 1815 the price averaged 1*s.* 10*d.* a pound, and in 1825 1*s.* 5½*d.*, a figure which was not exceeded until 1857, when it was 1*s.* 8½*d.*, the lowest in the interval being 9*d.* in 1830. After 1857 a period of inflation set in, when the fashion for lustre goods prevailed, ladies' dress materials known as glacés, &c., being chiefly made of it. In 1864 a maximum of 2*s.* 3⅝*d.* was reached, and the price was maintained at a high level till about 1876, when it began to fall away, but for twenty years, from 1857 to 1876, it averaged 1*s.* 8*d.* a pound. Owing to a demand for softer materials, these wools have since become of secondary importance. The following table gives the prices since 1883, from the *Bradford Observer*, with those of Leicester wool, from the *Economist*. For convenience Cheviot and Highland prices, from the *Journal* of the Highland and Agricultural Society of Scotland, are also included :—

TABLE 5.—*Price of Lincoln, Leicester, Cheviot, and Highland Wool.*

Year.	Average Annual Price per lb.				Percentage of Price in 1883-85.			
	Lincoln.	Leicester.	White Cheviot.	White Highland.	Lincoln.	Leicester.	White Cheviot.	White Highland.
	d.	*d.*	*d.*	*d.*				
1883....	10	9¼	13½	6	100	103	103	101
'84....	10	9	13⅛	6	100	100	103	101
'85....	9⅞	8¾	12⅛	5⅞	99	97	93	99
'86...	10	9⅜	12⅝	5⅞	100	104	97	99
'87....	10½	10	12¾	6⅛	105	111	98	103
'88....	10⅜	9⅝	12¾	5⅞	104	107	98	99
'89....	11	10⅛	13	5⅞	110	112	100	99
1890....	11	10¼	13	5⅞	110	114	100	99
'91....	9¾	9¾	12½	5⅞	98	108	96	99
'92....	8¾	8¾	12	5⅝	88	97	92	94
'93....	10¼	8⅞	11¾	5½	103	99	90	92
'94....	10⅛	9½	11½	5½	102	106	88	92
'95....	12	10	11¼	5⅜	120	111	86	90
'96....	11½	10⅜	10¾	5⅜	115	115	82	90
'97....	9⅝	9⅜	10¼	5⅝	97	104	79	94
'98....	8¾	8⅜	9	5⅜	88	93	69	90
'99....	8¼	7½	7⅞	4½	83	83	60	75
1900....	7⅞	6⅞	7⅞	4⅜	79	76	60	73
'01....	6⅞	5¾	6⅞	4¼	69	64	53	71

With the exception of a decline in 1891-92, Lincoln wool stood well above the average until 1897, since when a distinct fall has occurred, amounting in 1901 to 31 per cent. In 1889, and again in 1895, there was a boom, consequent on a change in fashion in favour of lustre goods. In October, 1895, the price of hog wool went up to 1*s.* 4½*d.*, and of wether wool to 1*s.* 1½*d.*, and these figures were fairly well maintained in the succeeding year. The production of pure lustre wool, however, is small, and is chiefly confined to Lincoln, Yorks, and Nottingham, so that the alterations in value only affect a small portion of the flock-owners of the United Kingdom. A quantity of this wool is received from flocks into which Lincoln blood has been introduced, especially from the River Plate, where rams of this breed have been freely imported. The only materials which compete with pure lustre are mohair and alpaca, though another kind of competition to which this commodity is exposed was recently referred to by the *Bradford Observer*, which stated that a vast variety of goods possessing almost every lustrous effect were to be seen in the drapers' shops, which did not contain an ounce of wool. "This," it continued, "is a very serious consideration for the trade, because if we are to arrive at lustre by chemistry, lustrous fibre, whether from the Angora goat or Lincoln sheep, must descend to the level of other wools so far as competition is concerned." Leicester wool comes under the heading of demi-lustre, which also includes what are known as Irish and Gloucester wools.

The British variety which more than any other seems to have suffered from depreciation in value is Cheviot. The quantity produced is comparatively small, but it is utilised in the manufacture of the fabrics which bear its name. As will be seen, in 1883 and 1884 it was worth 13½*d.* per pound, whereas in 1901 it had fallen to about one-half that sum, or 6⅞*d.* per pound.

Blackfaced wool, the description most largely produced by the Highland sheep farmer, is used for carpets, and in this direction competes with coarse qualities of foreign kinds. Taking the price of White Highland as typical of this class, the depreciation has been considerable in the past three years, though up to 1898 it had not fallen as much as 10 per cent.

The fluctuations of some of the principal descriptions of wool during the past nineteen years have now been traced, and it may be useful to indicate the average price of the whole period relatively to that obtained in the three years 1883-85, using the percentages given in the preceding tables. These work out as follows, the price in 1883-85 being regarded as 100 in each case. The figure for 1901 is also given for comparison :—

TABLE 6.—*Percentages of the Price in* 1883-85.

Variety.	Average over the Whole Period, 1883-1901.	In 1901.	Variety.	Average over the Whole Period, 1883-1901.	In 1901.
Port Philip fleece	83	73	English half-bred	101	78
,, grease	90	85	Southdown	94	72
Adelaide grease	94	82	Lincoln	98	69
Cape Eastern	86	69	Leicester	100	64
Australian cross-bred, medium	97	63	Cheviot	87	53
Australian cross-bred, coarse	95	60	Highland	93	71

Looking therefore at the period as a whole, it will be seen that merino fetched from 83 to 94 per cent. of the price in the three years which have been selected as a basis of comparison. It suffered much more severely than cross-bred wools, which fairly maintained their position, and up to 1893 stood generally above the level of 1883-85. The fall on the whole period was only 2·8 per cent. in the case of medium, and 5·3 per cent. for coarse cross-breds. English half-breds were even more successful, and from 1886 to 1896 fetched from 5 to 18 per cent. above the 1883-85 price, and realised 1 per cent. more on the whole period. Down wool began to fall away in 1894, and only averaged 94 per cent. of the base price. Lincoln and Leicester realised more than the standard for eleven or twelve years out of the nineteen, and must have proved a fairly satisfactory class of wool. Cheviot has had a less favourable experience, its average being lower than that of any other British variety.

But though the price of this commodity may not present so depressing an aspect when looked at over a long period as it often does in particular years, recent times, and particularly 1901, have seen wool of all kinds at what is probably the lowest level ever known, and this fact perhaps necessitates a passing reference to the question of supply. In view of the great decrease in the sheep stock of Australia, it might be supposed that the quantity of wool available in the world has diminished, but it would seem that the balance has been made up by the increased output of Argentina. The following table, which shows the exports from the Colonies and Argentina, indicates that no material decrease in the quantity received from the principal sources of supply occurred until the year 1900:—

TABLE 7.—*Total Export of Wool from the undermentioned Countries.*

	Australia.	New Zealand.	Cape Colony and Natal.	Argentina.	Total.
	Million lbs.	Million lbs.	Million lbs.	Million lbs.	Million lbs.
1887........	366	89	77	240	772
'88........	390	83	95	290	858
'89........	418	102	97	312	929
1890........	390	103	93	260	846
'91........	536	106	104	305	1,051
'92........	541	118	91	340	1,090
'93........	534	110	91	271	1,006
'94........	527	144	73	356	1,100
'95........	529	116	85	443	1,175
'96........	490	129	99	413	1,131
'97........	440	136	82	452	1,110
'98........	455	149	98	487	1,189
'99........	391	147	89	521	1,148
1900........	335	141	31	222	729
'01........	—	147	—	502	—

The diminution in the export in 1900 does not seem due to any failure in the supply, but to an absence of demand, which was indeed so pronounced that one series of London wool sales was entirely abandoned, while in those which were held very large quantities were withdrawn or remained unsold. Large shipments late in 1899 also affected the output from Argentina in 1900. Figures comparable with the above cannot be given for 1901, except in the case of Argentina and New Zealand, but the Australian exports seem to have been in excess of those of the three previous years. The estimates already given in Table 3 also show that the quantity of clean wool available was in fact greater in 1901 than in any previous year. In this connection it is important to recollect that the American tariff imposed in 1897, lessened the consumptive demand in subsequent years, for the imports, which in 1895-97 were 263 million lbs., only averaged 122 million in the three following years. As practically the whole of the exports shown in the above table are sent to Europe and North America, the quantity thrown on the European market, after deducting the United States imports, was, in spite of the small receipts in 1900, 899 million lbs. in 1898-1900, as compared with 874 millions in 1895-97, and it is, I would suggest, the increase in the quantity available, accompanied by a decrease in the demand from the United States, which is the primary cause of the fall in the value of this commodity.

II.—*The Instability of Prices in India before* 1861.

By T. Morison, M.A.

[Read before the Economics and Statistics Section of the British Association, held at Belfast, September, 1902.]

It has been asserted that prices in India have been more stable than prices in Europe. The object of this paper is to show, by the collection of price lists for the earlier years of the nineteenth century, that the tendency of prices in India has been from irregularity to stability; that prices before 1861 fluctuated violently and irregularly; and that as means of communication improved, and India came under the influence of western trade, prices became more stable.

The year 1861 is the year from which the official record of prices begins in that invaluable publication *Prices and Wages in India*, and the movements of prices for the last forty years are therefore easily ascertainable; but no one has, to my knowledge, yet attempted to collect and tabulate prices before 1861. The following tables are a small contribution towards filling that blank. They are a selection from the price lists which I have been able to collect from old Settlement reports, and from the account books of grain dealers, and they present a more or less continuous record of prices from 1804 to 1860. Table 1 gives the price of wheat at eight centres, Table 2 the price of barley at seven centres, and Table 3 the price of bàjrá at four centres.

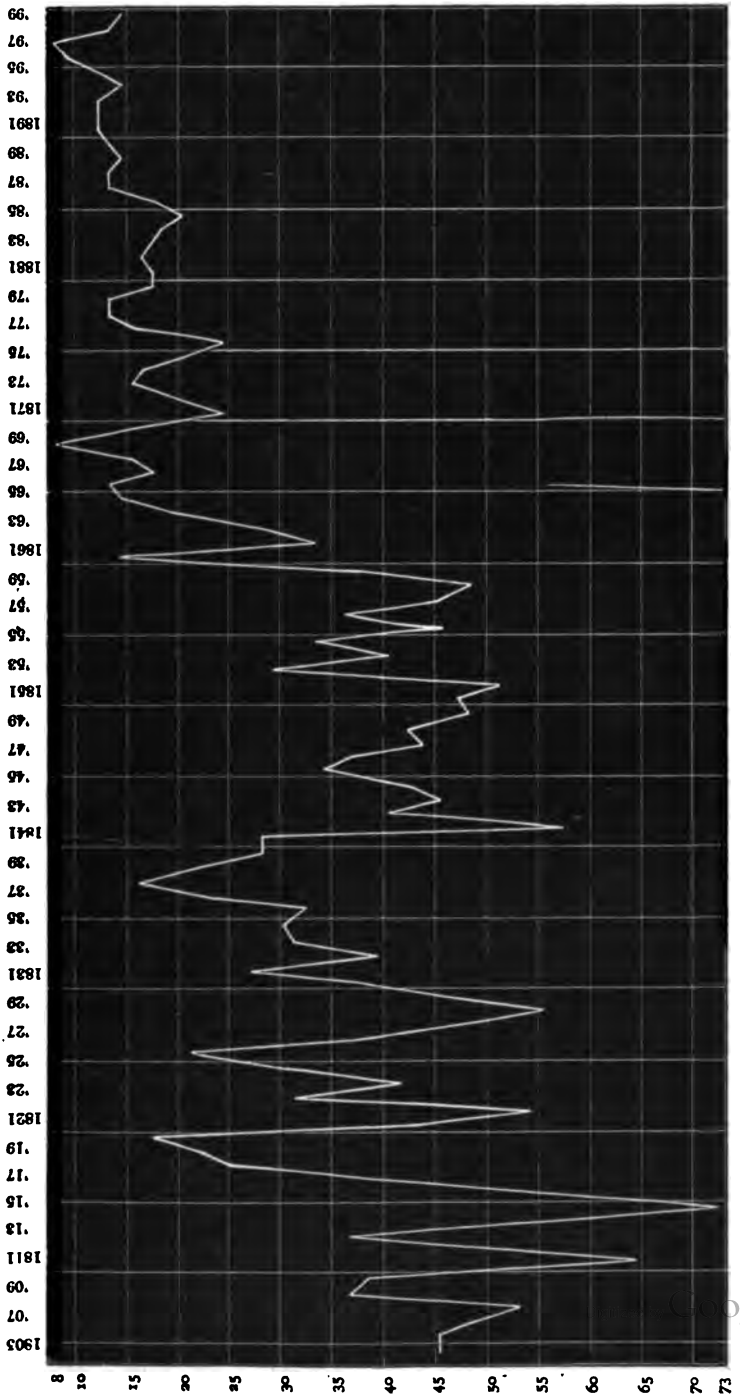
It will be seen that these eight centres—Alîgărh, Muttra, Agra, Cawnpore, Fatehpûr, Bareilly, Farîdpûr (Bareilly district), and Pilibhît—all lie either in the Doâb or Rohilkhănd, that is, in a comparatively small area of the North-Western Provinces. This is because I have thought it necessary to confine my inquiry to localities which are under the same climatic and industrial conditions. Generalisations about India as a whole are proverbially dangerous, but a study of the economic conditions of a particular area may be conducted with some promise of success, and may not be less valuable for the purpose of comparative economics than a more ambitious scheme.

The authorities from which I have taken my figures will be found in the Appendix, but there is one set of prices to which I should like to refer here, and that is the prices at Pilibhît. These figures, together with many others which I cannot now quote, were copied from the account books of an old firm of bankers and grain dealers, and forwarded to me by my friend and former pupil, Alaûl Hasan Sâhib, deputy collector. These old account books still exist in many districts, and would well repay a close investigation; in some cases their records are more interesting than those preserved by Government officials, in that they frequently mention two or more prices in the same year. In the famine year 1837, for instance, the Pilibhît grain dealer records three prices (20, 15, and 11 seers to the rupee) for wheat, which mark the progressive intensity of the great famine, and show how the unprecedented price of the succeeding year (10 seers to the rupee) was gradually established.

The course of the prices of wheat and barley from 1805 to 1899 are represented upon two price-curves; these curves represent the prices of wheat and barley at one centre—Bareilly—for which alone I possess an unbroken record. Had I represented the movement of prices by the average price of the eight markets, I should have given a false impression of stability, as the local variations tend to neutralise one another, and my object has been to show how violently prices used to fluctuate in the local markets, and of these local markets the important town of Bareilly may fairly be considered typical.

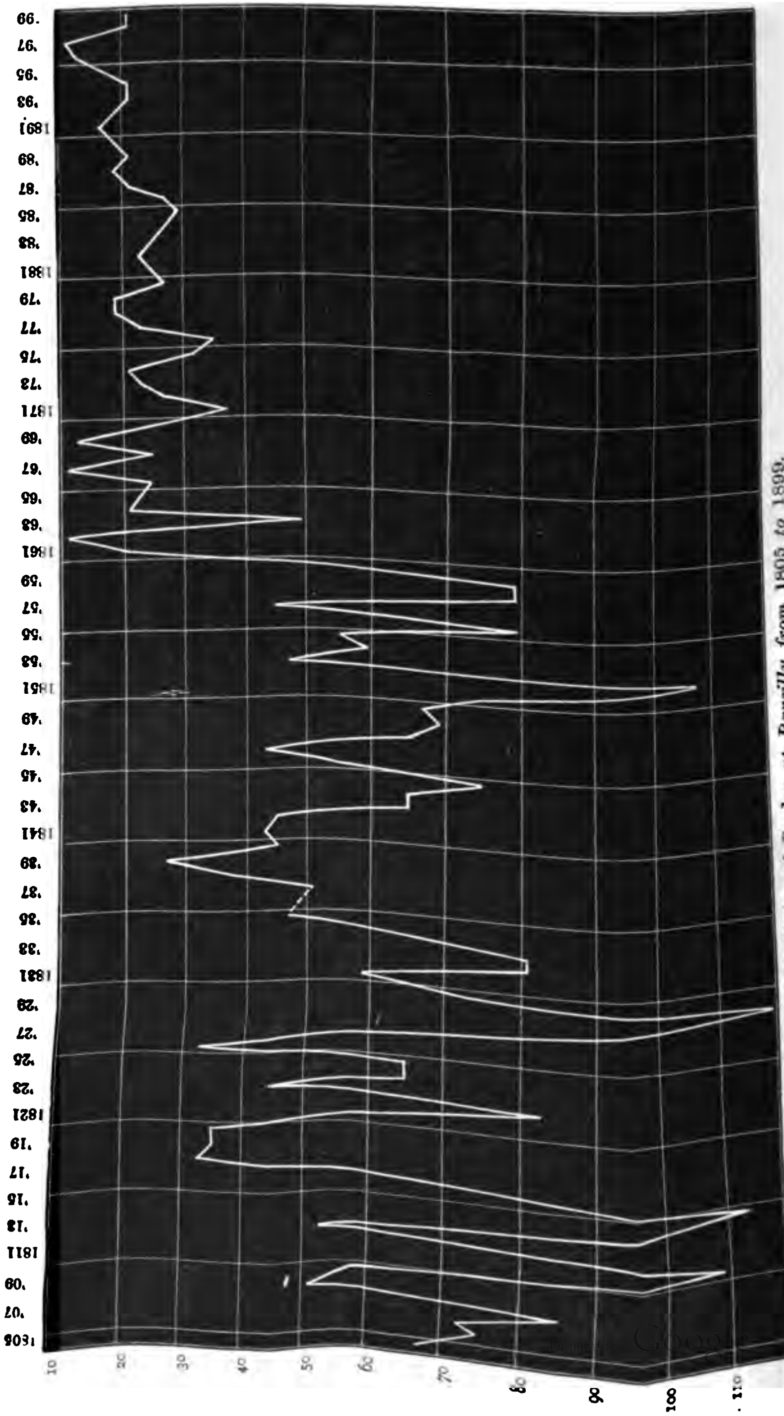
The general character of these curves is violent fluctuation until the year 1864, followed by a period of comparative stability at a much higher level of prices. These higher and rising prices are of course due to the enormous importation and coinage of silver after 1855, with which all readers are familiar.

The two curves faithfully reflect the crop failures of the century—the scarcities of 1813, 1826, and 1832, no less than the historic famines of 1819, 1837, and 1861—but the fluctuations in price before 1861 are not confined to these calamitous years. The following are the prices of wheat in Bareilly for the five years 1807-11:—49, 54, 37, 39, 65, 56, and the prices in Alîgărh are equally irregular, there being between the years 1809-11 a fall of 55 per cent. The instability of the price of the cheaper grains,



Price of Wheat at Bareilly, from 1805 *to* 1899.

[In seers to the rupee.]



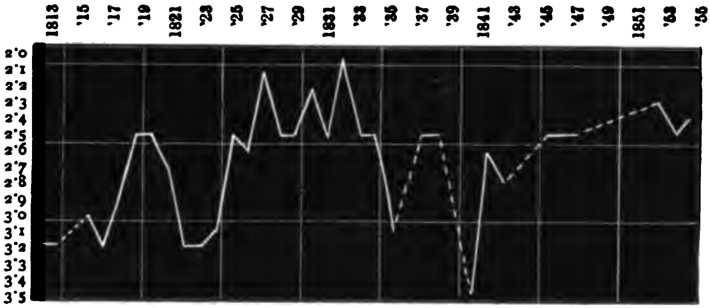
Price of Barley at Bareilly from 1805 *to* 1899.
[In seers to the rupee.]

which form the staple food of the people, is even more remarkable. There seems to have been no normal price for barley before 1861; in famine years it rose almost to the price of wheat, and in times of plenty fell away to next to no price at all. This uncertainty with regard to the price of barley is well illustrated by the grain dealer in Pilibhît, who records for the one year 1831 the two remarkably different prices, 60 seers and 37 seers to the rupee.

Great however as are the variations chronicled in these tables, they do not in my opinion record the full extent of the fluctuation in prices; these tables give the average price for the year, but the fluctuations within the twelve months, though rarely recorded, were always considerable. Even to this day grain in India is cheapest at harvest time, but the difference between the harvest price and the annual price was much more marked in the early years of the nineteenth century. According to Mr. R. S. Whiteway, who made an interesting study of this subject, in his report on the Settlement of Muttra, the difference at Muttra between harvest rates and bazaar rates for wheat was 27 per cent. for the period 1813-37, 23 per cent. for the period 1837-57, and only 17 per cent. for the period 1857-76. But even in this latter period—in 1874—Mr. P. J. White wrote: "The profusion of harvest prices shows what a necessitous creature is your ordinary ryot. He cannot wait till after the harvest, until the grain dealer shall pay him a price in some agreement with the average annual value of the produce. The poor helot of the soil is forced to sell at once, forced to flood an already full market, and thus with open eyes depreciate his own goods." (*General Report on the Settlement of Pargannah Koonch, Zillah Jâlaun.*) The inclusion of harvest prices in the diagrams would have the effect of accentuating their irregular and changeful character, because harvest prices are even less stable than bazaar (*i.e.*, annual average prices). One is inclined to assume that the two sets of prices vary together at different levels, but this is not the case; in famine years harvest prices and bazaar prices are almost identical, but in years of plenty they diverge widely, as harvest prices fall to a point which bazaar prices never touch.

The instability of prices during the first half of the nineteenth century was the natural consequence of the almost entire absence of means of transport. It is hard for us to realise the extent to which every town and village in those days constituted an isolated and independent market. There were no metaled roads, and the only carriers were the Banjâras, who moved about the country with herds of pack animals, "devastating the crops along the line of their march, and hammering the villagers who protested," as a bygone collector complains. That the movements of grain so carried were small we can see by the very considerable difference of prices ruling in adjoining districts. In 1804 there was a famine in the Doâb (wheat in Alîgărh sold for 19 seers to the rupee), whereas in Bareilly, the capital of the neighbouring province of Rohilkhănd, wheat was selling at 60 seers to the rupee; but so impossible was it to transport grain over less than 100 miles of flat country, that the Government caused food to be imported into the famine-stricken area by river from points 500 to 600 miles distant. Even as late as 1861, when these districts were again visited by famine, the Grand Trunk Road was the sole means of communication by which food could be brought to them, and Colonel Baird Smith records that the road utterly broke down under the strain caused by the unwonted congestion of traffic. So slowly were means of transport developed, that the great Anglo-Indian statesmen of the last generation recognised as one of the lessons of previous famines, that it was futile to attempt to supply the deficiency of the harvest by importation. But in the last thirty years a revolution has taken place in the condition of internal trade. Nowadays there is practically but one market for grain in India. In the famine of 1896-97 "the prices (of grain) varied little between the worst and the best districts. The difference cannot even be measured by the cost of carriage. Sometimes the rate of a particular grain will be found quoted higher in a well-stocked Meerut district than in a market of afflicted Bundelkhand." (*North-West Province and Oudh Gazette*, 27th November, 1897.) Now that facilities for transport have been created, the grain dealers are on the alert to forward their merchandise to any place where it will command a good price, and the consequence has been to create an average price for grain over an immense area, and as the inequalities of the harvest in different places tend to neutralise one another, the price of grain tends more and more to stability.

The conclusion which I draw from a study of the prices of the nineteenth century is that silver prices in India fluctuated the more, the less the place at which they were collected has been under the influence of Western trade and means of transport. To such an argument it may be objected that my figures are only for cereal crops, which are particularly exposed to the vicissitudes of climate, but that I have not shown that all prices fluctuated, and therefore that I have in no way shaken the opinion that silver is a more stable measure of value than gold. In a country so wholly agricultural as India, there are very few prices but those of agricultural produce, and therefore all Indian price lists reflect the vicissitudes of the season. In the series of index-numbers prepared by Mr. F. J. Atkinson for India, every famine will be found as faithfully reflected as in the accompanying diagrams. I have, however, been able to find a record of the price of one article of general consumption which is not affected by the causes which produce famine prices in cereals: that article is *ghī* or clarified butter; though one of the most destructive results of drought is the loss of cattle, yet it is a well known fact that the immediate effect of a famine is rather to lower than to raise the price of *ghī*. Table 4 gives the price of *ghī* in Pilibhît from the year 1813 to 1854 in seers and decimals of a seer to the rupee; it will be seen that the price-curve, which is prepared from Table 4, reveals very considerable fluctuations. The maximum variation is 59 per cent., but there are frequently changes of price varying from 25 per cent. to 40 per cent. within a period of two years. This is the more remarkable, because *ghī* belongs to that class of commodities the supply of which cannot be very largely increased or decreased in a short space of time.



Ghi.

[In seers and decimals of a seer.]

The thesis which I have attempted to maintain in this paper is a very trite and commonplace one; it is entirely in harmony with deduction and experience, that facility of transport should steady prices, that prices at all places near the railway should be reduced to one average price, and that that average price should be more steady than the price at a small and isolated market. This is exactly what we should have expected, and I have only laboured to show that the expected has happened, because it is often argued that Indian economic conditions are totally dissimilar to those with which we are familiar, and that India is an exception to all analogies. The materials for an analysis of the economic condition of India have still to be collected, but when this has been done I believe that it will be found that in many other respects the experience of India has been absolutely normal. In the meanwhile I venture to think that the accompanying price lists, meagre as they are, suggest answers to questions much more interesting than the one I have dealt with here. They suggest, for instance, a negation of the belief that we have any experience of a customary price for commodities in India. No tables could of course be copious enough to establish this negative proposition, but it is surely of interest to notice that the further they are removed from the great markets of the world and the conditions of modern commerce, the more do prices fluctuate; that is to say, that prices do not seem to have been regulated by custom even in industrial conditions over which custom exercised the strongest influence.

TABLE 1.—*Wheat.*

	1804.	'05.	'06.	'07.	'08.	'09.	'10.	'11.	'12.	'13.
Alîgărh	19	25	35	35	28	23	33	51	35	23
Muttra	—	—	—	—	—	—	—	—	—	22
Agra	—	—	—	—	—	—	—	—	—	—
Cawnpore	—	—	—	—	—	—	—	—	—	—
Fatehpûr	—	—	—	—	—	—	—	—	—	—
Bareilly........	—	46	46	49	54	37	39	65	56	87
Farîdpûr ...	—	—	—	—	—	—	—	—	—	—
Pilibhît	—	—	—	—	—	—	—	—	32	42

	1814.	'15.	'16.	'17.	'18.	'19.	'20.	'21.	'22.	'23.
Alîgărh	85	47	41	29	20	19	19	29	83	29
Muttra	26	45	88	26	21	18	18	24	28	25
Agra	—	41	84	28	18	17	17	26	80	24
Cawnpore	—	—	—	—	—	—	—	—	—	19
Fatehpûr	—	—	—	—	—	—	—	—	—	—
Bareilly.......	56	73	56	43	26	23	18	44	55	32
Farîdpûr	—	—	—	—	24	23	49	55	32	43
Pilibhît	—	—	26	27	23	18	26	40	32	20

	1824.	'25.	'26.	'27.	'28.	'29.	'30.	'31.	'32.	'33.
Alîgărh	84	29	26	38	85	39	40	35	37	—
Muttra	33	26	20	20	81	36	37	82	41	31
Agra	31	27	19	21	80	86	84	31	84	31
Cawnpore	24	26	15	16	31	33	27	26	80	28
Fatehpûr	—	—	—	—	—	—	22	22	26	22
Bareilly........	43	31	22	37	48	56	46	88	28	40
Farîdpûr	39	25	84	54	54	50	—	—	—	—
Pilibhît	37	30	30	28	86	45	85	80	32	22

	1834.	'35.	'36.	'37.	'38.	'39.	'40.	'41.	'42.
Alîgărh	—	—	—	—	—	—	—	—	—
Muttra	27	86	—	—	—	—	23	25	28
Agra	25	29	32	23	13	20	—	—	—
Cawnpore	26	28	24	19	14	20	20	22	25
Fatehpûr	21	21	20	19	21	19	18	19	22
Bareilly........	82	31	84	24	17	22	29	29	58
Farîdpûr	—	—	—	19	21	34	31	30	43
Pilibhît	30	33	24 {	20 15 11	} 10	—	20	26	34

	1843.	'44.	'45.	'46.	'47.	'48.	'49.	'50.	'51.
Alîgărh	—	37	36	33	33	34	38	46	48
Muttra	30	30	34	32	31	30	37	40	41
Agra	—	—	—	—	—	—	—	—	—
Cawnpore	29	27	26	25	—	—	—	—	—
Fatehpûr	25	23	21	22	24	27	30	25	—
Bareilly........	41	46	43	35	37	44	43	49	48
Farîdpûr	45	36	39	42	51	51	51	49	31
Pilibhît	—	—	23	20	36	39	—	30	—

TABLE 1.—*Wheat—Contd.*

	1852.	'53.	'54.	'55.	'56.	'57.	'58.	'59.	'60.
Alîgărh	29	28	—	—	—	—	—	—	—
Muttra	28	29	30	40	36	—	—	—	—
Agra	—	—	—	—	—	—	—	—	—
Cawnpore	—	—	—	—	—	—	—	—	—
Fatehpûr ...	—	—	—	—	—	—	—	—	—
Bareilly........	52	30	41	34	46	37	46	49	38
Farîdpûr	30	39	42	57	31	51	38	26	19
Pilibhît........	37	37	25	—	—	—	—	—	—

TABLE 2.—*Barley.*

	1805.	'06.	'07.	'08.	'09.	'10.	'11.	'12.	'13.	'14.
Muttra	—	—	—	—	—	—	—	—	31	52
Agra	—	—	—	—	—	—	—	—	—	—
Cawnpore	—	—	—	—	—	—	—	—	—	—
Fatehpûr	—	—	—	—	—	—	—	—	—	—
Bareilly........	67	75	73	85	51	57	110	95	53	96
Farîdpûr	—	—	—	—	—	—	—	—	—	—
Pilibhît........	—	—	—	—	—	—	—	—	—	—

	1815.	'16.	'17.	'18.	'19.	'20.	'21.	'22.	'23.	'24.
Muttra	61	56	39	29	30	21	46	46	36	40
Agra	62	55	39	22	22	21	37	46	35	44
Cawnpore	—	—	—	—	—	—	—	—	28	35
Fatehpûr	—	—	—	—	—	—	—	—	—	—
Bareilly........	113	87	66	34	36	36	66	83	46	66
Farîdpûr	—	—	—	—	—	—	—	—	—	—
Pilibhît........	—	—	40	—	—	—	—	—	—	60

	1825.	'26.	'27.	'28.	'29.	'30.	'31.	'32.	'33.
Muttra	31	26	35	48	51	50	45	50	45
Agra	30	24	35	39	46	39	31	37	32
Cawnpore	35	19	26	50	55	40	35	45	39
Fatehpûr	—	—	—	—	—	30	31	40	32
Bareilly........	66	33	60	90	120	73	60	81	81
Farîdpûr	—	—	—	—	—	—	—	—	—
Pilibhît........	—	56	—	—	80	— {	60 37	} —	40

TABLE 2.—*Barley—Contd.*

	1834.	'35.	'36.	'37.	'38.	'39.	'40.	'41.	'42
Muttra	40	59	—	—	—	—	—	—	—
Agra	27	42	44	29	16	28	—	—	—
Cawnpore	34	39	32	22	18	32	30	29	34
Fatehpûr	25	26	26	24	27	23	28	22	25
Bareilly........	68	47	—	52	37	28	46	44	46
Farîdpûr	—	—	—	24	25	51	44	45	63
Pilibhît	—	70	—	—	—	—	—	—	60

	1843.	'44.	'45.	'46.	'47.	'48.	'49.	'50.	'51.
Muttra	—	—	—	—	—	—	—	—	—
Agra	—	—	—	—	—	—	—	—	—
Cawnpore	43	42	40	37	—	—	—	—	—
Fatehpûr	28	30	30	30	30	34	40	41	—
Bareilly........	65	66	75	56	44	66	70	67	75
Farîdpûr	70	66	60	66	72	63	60	58	43
Pilibhît	—	—	—	—	—	—	—	—	—

	1852.	'53.	'54.	'55.	'56.	'57.	'58.	'59.	'60.
Muttra	—	—	—	—	—	—	—	—	—
Agra	—	—	—	—	—	—	—	—	—
Cawnpore ...	—	—	—	—	—	—	—	—	—
Fatehpûr	—	—	—	—	—	—	—	—	—
Bareilly........	107	48	60	56	80	45	80	80	60
Farîdpûr ...	51	51	51	76	43	70	51	44	25
Pilibhît	—	—	—	—	—	—	—	—	—

TABLE 3.—*Bàjrá.*

	1806.	'07.	'08.	'09.	'11.	'12.	'13.	'14.	'15.
Alîgărh	—	—	—	—	—	—	—	—	—
Agra	—	—	—	—	—	—	—	—	53
Bareilly........	69	57	58	48	95	87	61	76	93
Farîdpûr	—	—	—	—	—	—	—	—	—

	1816.	'17.	'18.	'19.	'20.	'21.	'22.	'23.	'24.
Alîgărh	—	—	—	—	—	—	—	—	—
Agra	45	32	19	21	19	35	37	29	36
Bareilly........	66	60	24	38	33	32	69	29	48
Farîdpûr	—	—	35	35	40	73	45	55	45

TABLE 3.—*Bàjrá—Contd.*

	1825.	'26.	'27.	'28.	'29.	'30.	'31.	'32.	'33.
Alîgărh	—	—	—	—	—	40	41	33	36
Agra	28	23	30	36	44	39	31	35	30
Bareilly	50	26	30	45	93	60	70	51	51
Farîdpûr	29	36	50	100	68	67	45	—	—

	1834.	'35.	'36.	'37.	'38.	'39.	'40.	'41.	'42.
Alîgărh	36	43	61	56	30	29	—	—	—
Agra	28	38	34	25	18	31	—	—	—
Bareilly	46	52	48	30	17	42	41	36	49
Farîdpûr	—	—	—	16	56	38	34	51	57

	1843.	'44.	'45.	'46.	'47.	'48.	'49.	'50.	'51.
Alîgărh	—	—	—	—	—	—	—	—	—
Agra	—	—	—	—	—	—	—	—	—
Bareilly	49	53	50	42	49	49	46	80	66
Farîdpûr	51	40	51	78	57	76	76	73	70

	1852.	'53.	'54.	'55.	'56.	'57.	'58.	'59.	'60.
Alîgărh	—	—	—	—	—	—	—	—	—
Agra	—	—	—	—	—	—	—	33	19
Bareilly	66	53	49	41	87	35	80	45	36
Farîdpûr	40	47	66	65	38	51	38	76	20

TABLE 4.—*Ghî.*

[In seers and decimals of a seer to the rupee.]

	1813.	'14.	'16.	'17.	'18.	'19.	'20.	'21.	'22.	'23.	'24.
Pilibhît	3·25	3·25	3	3·265	2·941	2·5	2·5	2·75	3·25	3·25	3·125

	1825.	'26.	'27.	'28.	'29.	'30.	'31.	'32.	'33.	'34.	'35.
Pilibhît	2·5	2·622	2·187	2·5	2·5	2·25	2·5	2·051	2·5	2·5	3·125

	1837.	'38.	'40.	'41.	'42.	'45.	'46.	'47.	'52.	'53.	'54.
Pilibhît	2·5	2·5	3·5	2·622	2·807	2·5	2·5	2·5	2·352	2·5	2·461

APPENDIX.

The following are the references to the authorities from which these price lists are quoted :—

TABLE 1.

Alîgărh	1804-32.	Vol. iii, *Asiatic Society Journal*, by Ed. Stirling, taken from the Kotwali records of the town of Coel.
	'44-53.	*Alîgărh Statistics*, J. R. Hutchinson, 1856.
Muttra	'13-35.	*Muttra Settlement Report*, R. S. Whiteway, 1879.
	'40-56.	*Mainpuri Settlement Report*, C. H. J. Crosthwaite, 1875.
Agra	'15-39.	,, ,,
Cawnpore	'23-46.	*Cawnpore Statistics.*
Fatehpûr	'30-50.	*Statistics of Fatehpûr.*
Bareilly........	'05-60.	*Bareilly Settlement Report*, prepared by S. M. Moens, 1874. (In this column the figures are $\left(\frac{\text{lbs. avoirdupois}}{2}\right)$.
Farîdpûr	1818-60.	*Settlement Report of Panganah Farîdpûr; Zillah Bareilly*, S. M. Moens, 1867. (The figures are $\left(\frac{\text{lbs. avoirdupois}}{2}\right)$.
Pilibhît	1812-54.	From the *Account Books of Tai Ram and Zoki Ram, baniyas Pilibhît.*

(The weights are given in the Pilibhît seer, which weighs 105 Government rupees, whereas the ordinary standard seer = Rs. 80.)

TABLE 2.

Muttra	1813-35.	The same as for wheat.
Agra	'15-39.	,,
Cawnpore	'23-46.	,,
Fatehpûr	'30-50.	,,
Bareilly........	'05-60.	,,
Farîdpûr	'37-60.	,,
Pilibhît........	—	,,

TABLE 3.

Alîgărh	1830-39.	I cannot now find the reference to the authority for these figures.
Agra		The same as for wheat.
Bareilly........		,,
Farîdpûr		,,

TABLE 4.

Pilibhît	From the account books mentioned above, and copied for me by Alaŭl Hasan Săhib.

The figures from 1861 to 1899 in the price curves are taken from *Prices and Wages in India* (1900).

With regard to these figures generally I should like to observe that the prices of wheat seem to me to have been more carefully kept than the prices of the cheaper grain.

The price of barley at Bareilly in 1836 I have not entered; Mr. S. M. Moens gives the price in his Settlement Report as 37 lbs. avoirdupois = 18½ seers, which is an impossible price when wheat was selling for 34 seers; I think that it is possibly a printer's error for 137 lbs. (as in the year 1834). Similarly the price of barley at Bareilly in 1867 is difficult to understand. In *Prices and Wages* it is entered as 12·59 seers, though wheat at the same time and place is returned at 18 seers; in corroboration of these figures it should be mentioned that the same anomaly is recorded at Pilibhît.

In Bareilly and the neighbouring towns the local seer is a good deal heavier than the Government or standard seer: its weight being from 100 to 105 rupees, whereas the standard seer = Rs. 80. S. M. Moens, who was an indefatigable and most conscientious collector of statistics, usually converted these weights into lbs. avoirdupois for the purposes of comparison with other districts, but the curious result is that his prices appear much lower than those prevailing elsewhere, while those recorded in the heavier Bareilly seer correspond pretty closely with the common level of prices throughout the provinces.

III.—*State of the German Banks.* By F. Moos.

GERMANY had, at the close of the year 1901, 171 banks, of which 7 were banks issuing notes, 39 mortgage banks, and 125 joint stock-banks attending to all the branches of banking and bourse operations, in which the German banking system is different to the English. It is now proposed to reform bank legislation on the English plan and to separate deposit-banks from issue-banks. However, the German public are so accustomed to give their bankers orders for buying, selling, subscribing, and indeed for all sorts of business, that the proposed reform project is not likely now to come into force. Even the Government shows no disposition to promote it, nor does Parliament. All the discussion is about theories so far.

The summer of 1901 had brought some strain to the banks, testing both their judgment and resources. A few days after the downbreak of the Leipzig Bank, which was an old concern of high reputation, and soon after the failure of some mortgage banks, the public took alarm and a run was made on the Dresden Bank, which within a few days paid out a handsome number of millions of deposits. After such a manifestation of strength, the fever subsided as quickly as it had come on. The National Bank also withstood the run. The Berlin Bank, a comparatively young concern of 42 millions capital in shares, gave ample proof of the sufficiency of its means and its business. The fact is, however, that large deposits were withdrawn from nearly all the banks, except the Deutsche Bank, whose deposits increased by about 100 million marks in the same period.

The growth of the German Bank business is best demonstrated by the fact that in the year 1883 there were but 71 credit-banks, instead of the 125 of to-day.

In 1901 the 171 banks of all categories wielded a capital of 17·44 milliard marks, but of this sum 3½ milliards were made up by the bank shares and reserves. The remaining 13·94 milliard marks consist of the following items:—

	1893.	1900.	1901.
Creditors and profits to be paid out	1,344·9	2,809·9	2,535·2
Deposits	797·7	1,706·3	1,811·6
Signatures (drafts)	581·5	1,389·6	1,239·8
	2,724·1	5,905·8	5,586·6
Bank notes	1,297·5	1,610·4	1,637·5
	4,021·6	7,516·2	7,224·1
Mortgages	4,001·1	6,504·4	6,714·9
	8,022·7	14,020·6	13,929·0

The changes during the year 1901 do not appear of importance; the increase of deposits merely show that money is idle, owing to stagnation of trade, and the decline in drafts (signatures) on the banks of about 150 million marks is rather slow, considering the previous indulgence in that system of "making money." Of all the discounts the "drafts" represented the following percentage:—

1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.
Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.
33	36	35	38	40	41	40	42	39	45	45

Nearly one-half of all the discounts are "drafts" drawn by customers on the banks and signed by the latter. For this is a very easy way of advancing money to trade. It is stated that about one-third of all the credits granted by the banks to the trade are raised by these "drafts."

The feature, although it ought not to be condemned without a glance at the advantages it brings if judiciously applied, is one of the causes of the present stagnation in trade, which, in the first place, is due to over-production. The banks were too ready to advance money to traders, and encouraged them to extend their arrangements beyond reasonable limits. Moreover, foreign capital helped to bring things to the top. When money was wanted for this market, the banks and bankers deposited these drafts on themselves in London and Paris, and obtained for them foreign bills, which they sold. The foreign capital thus invested in German trade, banks, and bourses ran up to a very high figure, fostered over-production, yielded large profits, and was at last (rather suddenly) withdrawn when the crisis of 1901 approached.

The banks employed their capital as follows :—

	1893.	1900.	1901.
	Milliard marks.	Milliard marks.	Milliard marks.
Cash	1,176·2	1,231·0	1,389·7
Debtors	1,841·0	4,249·4	4,049·7
Discounts	1,611·5	3,087·1	2,776·6
Stocks	489·9	945·1	1,026·1
Advances	556·0	821·0	885·3
	5,674·6	10,333·6	10,127·4
Mortgages	4,349·9	7,080·5	7,311·3
	10,024·5	17,414·1	17,438·7

Banking, after the deduction of mortgages, absorbed 10·13 milliard marks (against 10·33 milliard marks in 1900); of this sum about 1,389·7 millions *are cash*, but this figure includes the cash held by the Imperial Bank, amounting to 897·3 million marks, whilst the banks hold a large part of this cash stock.

The highest average dividend distributed by the banks was 8·21 per cent., in 1899; in 1900, 7·49 per cent.; 1901, 6·02 per cent.

The capital in shares entitled to a dividend amounted to 2,754,550,000 marks in 1900, and 2,808,120,000 marks in 1901.

Writings-off and carryings to the reserve are on record as under :—

	Writings-off.	Reserves.		Writings-off.	Reserves.
	Per cent.	Per cent.		Per cent.	Per cent.
1883	5·39	6·66	1900	71·79	24·83
'99	13·78	22·51	'01	70·09	40·50

Business expenses have grown considerably, as the following statement, which is exclusive of stamps and incidentals, shows :—

	Mln. marks.		Mln. marks.
1883	25·22	1900	93·77
'95	51·81	'01	99·58

A special inquiry into the condition of the credit-banks involves some interest to English readers, as these banks represent Germany's transactions with the markets abroad.

IV.—*Agricultural Returns of Great Britain*, 1902.

PRELIMINARY statement for 1902, compiled from the returns collected on 4th June, and comparison with 1901.

CROPS.

Distribution.	1902.	1901.	Increase.		Decrease.	
	Acres.	Acres.	Acres.	Per cent.	Acres.	Per cent.
Total area of land and water	56,786,173	56,786,173	—	—	—	—
Total acreage under all crops and grass*	32,387,965	32,417,445	—	—	29,480	0·1
Wheat	1,726,473	1,700,965	25,508	1·5	—	—
Barley	1,909,383	1,972,448	—	—	63,065	3·2
Oats	3,057,203	2,996,902	60,301	2·0	—	—
Rye	68,379	56,650	11,729	20·7	—	—
Beans	243,101	251,613	—	—	8,512	3·4
Peas	179,751	155,130	24,621	15·9	—	—
Potatoes	573,880	577,260	—	—	3,380	0·6
Turnips and swedes	1,608,661	1,664,525	—	—	55,864	3·4
Mangold	441,414	398,805	42,609	10·7	—	—
Cabbage	69,039	60,341	8,698	14·4	—	—
Kohl-rabi	23,937	17,004	6,933	40·8	—	—
Rape	100,356	102,980	—	—	2,624	2·5
Vetches or tares	172,147	157,546	14,601	9·3	—	—
Lucerne	53,663	43,546	10,117	23·2	—	—
Other crops	104,788	107,223	—	—	2,435	2·3
Clover and rotation grasses—						
For hay	2,364,302	2,356,415	7,887	0·3	—	—
Not for hay	2,467,596	2,499,972	—	—	32,376	1·3
Total	4,831,898	4,856,387	—	—	24,489	0·5
Permanent grass—*						
For hay	4,580,719	4,350,459	230,260	5·3	—	—
Not for hay	12,225,802	12,476,790	—	—	250,988	2·0
Total	16,806,521	16,827,249	—	—	20,728	0·1
Flax	838	640	198	30·9	—	—
Hops	48,024	51,127	—	—	3,103	6·1
Small fruit	75,378	74,999	379	0·5	—	—
Bare fallow	293,131	344,105	—	—	50,974	14·8

* Not including mountain and heath land.

LIVE STOCK.

Distribution.	1902.	1901.	Increase.		Decrease.	
	No.	No.	No.	Per cnt.	No.	Per cnt.
Horses used solely for agriculture †	1,076,170	1,089,418	—	—	13,248	1·2
Unbroken horses—						
1 year and above	298,606	294,162	4,444	1·5	—	—
Under 1 year	130,013	127,851	2,162	1·7	—	—
Total of horses	1,504,789	1,511,431	—	—	6,642	0·4
Cows and heifers in milk or in calf	2,556,126	2,602,294	—	—	46,168	1·8
Other cattle—						
2 years and above	1,332,362	1,427,983	—	—	95,621	6·7
1 year and under 2	1,385,776	1,407,653	—	—	21,877	1·6
Under 1 year	1,281,712	1,325,964	—	—	44,252	3·3
Total of cattle	6,555,976	6,763,894	—	—	207,918	3·1
Ewes kept for breeding	9,999,171	10,161,830	—	—	162,659	1·6
Other sheep—						
1 year and above	5,523,710	5,940,896	—	—	417,186	7·0
Under 1 year	10,242,825	10,274,474	—	—	31,649	0·3
Total of sheep	25,765,706	26,377,200	—	—	611,494	2·3
Sows kept for breeding	349,000	319,724	29,276	9·2	—	—
Other pigs	1,950,567	1,860,201	90,366	4·9	—	—
Total of pigs	2,299,567	2,179,925	119,642	5·5	—	—

† Including mares kept for breeding.

V.—*Notes on Economical and Statistical Works.*

Labour Legislation, Labour Movements, Labour Leaders. By George Howell. 499 + xxiii pp., 8vo. London: T. Fisher Unwin, 1902.

In the successive chapters of this book Mr. Howell tells, with the authentic detail of personal knowledge, the story of the trade union movement during the last century, combining with his main theme some references to connected topics of more general interest to the labour world. The story is no less interesting than it is instructive, and we doubt whether so detailed a record of the events of the different stages through which trade unionism has won its way to its position could be found elsewhere. It is a story of which the concluding portion could not have been foretold with certainty by those acquainted with its opening incidents. In reading the book we have been reminded again and again of the severe protracted character of the struggle waged by those English "labour leaders," among whom Mr. Howell himself may claim a conspicuous place, before they removed the disabilities of the law, and established trade unionism on a footing of recognised authority. It is one instance of the "irony of fate," which haunts the efforts of men, that the final chapter should be devoted largely to the consideration of recent decisions of the Courts which have altered that peculiar legal status which leaders like Mr. Howell thought they had secured as the result of this long and arduous contest. They believed—and early decisions of the judges tended to encourage the belief—that the unions had obtained protection for their funds from the dishonesty of their officials, without incurring any liability to be mulcted for the action taken by those officials against employers. The impartial bystander will perhaps consider that there was something anomalous in this apparent divorce between legal protection and legal responsibility; and it is doubtful whether public opinion would now support trade unionists in an endeavour to reinstate themselves by legislation in the position which they thought they occupied. But the recent decisions of the judges, making trade unions collectively responsible, and suable as corporations, for illegal acts, whether they are right or whether they are wrong, have occasioned surprise, and produced misgiving and alarm in labour circles. Mr. Howell, with the experience of the past behind him, chequered with successes and reverses, discusses these fresh problems with the calm candour and mellow wisdom with which he now regards "new unionism." That at its birth, some years ago, aroused his ire; for, departing from the caution which experience had made traditional if not instinctive with the older leaders, it asserted noisily the aggressive side of unionism, eagerly embracing and provoking opportunities for strife, and, avowedly despising as old fashioned and forming no part of its business the provision of those "benefits" for sickness, and old age, and death, which the older unions shared with other varieties of friendly societies, and had nursed until they had formed the preponderant portion of their expenditure. Mr. Howell now recognises that here, as in other cases, among which might be included some instances of the older and larger labour associations, maturity has brought prudence, and the new unions have settled quietly on the lines laid down by their predecessors. His whole book, indeed, might be described as a sermon on the sobering influence of responsibility. He shows how hostile and unreasoning was once the attitude of the legislature and of public opinion to the ambitious aspirations of the labour world; and he also shows how the justification, which existed for the alarm and distrust with which trade unions were regarded in the upper and middle strata of society, was removed by the conduct of the suspected labour leaders when once they were given the legal recognition that they sought. For this reason, if for no other, this story of "labour legislation," "labour movements," and "labour leaders," was worth telling with the abundant fulness which Mr. Howell has in this, as in other works, bestowed on its narration. Some of the copious detail of his chapters might be dismissed as "ancient history" by impatient readers acquainted with his earlier *Conflicts of Capital and Labour;* but they could hardly fail to admit that such a narrative as that here given by an actor "behind the scenes" might furnish explanations of incidents unobserved or misinterpreted by those who had not enjoyed these special facilities. Mr. Howell has made the most of his opportunities. He has placed old facts, which he himself had recorded before, in a fresh light; he has added new facts as full of abiding instruction as they were significant at the moment when they occurred. All who are interested, whether as friends or as foes, as advocates or as critics, in "labour movements," will read these "recollections" of a veteran leader, who has served his cause for many a year, in its early period of struggling adversity as well as in its later epoch of acknowledged success, with the attention which they deserve. The book, we think, should be studied together with Mr. and Mrs. Webb's exhaustive examination of the subject of trade unionism. Neither is wholly free from bias, but they supply the student with a mass of facts based on first-hand knowledge or derived from original inquiry; and in some respects they may be said to supplement one another, for the bias by which they are influenced has a different inclination. Mr. Howell certainly interprets the development of unionism from another standpoint than that adopted by Mr. and Mrs. Webb; but they have thrown new light on its earlier origins and its later aspirations.

The Past and Present of Japanese Commerce. By Yetaro Kinosita. 164 pp., 8vo. New York: The Columbia University Press, 1902.

This monograph forms one of the "Studies in History, Economics, and Public Law" edited by the Faculty of Political Science in Columbia University. The abundance and excellence of these American publications may well arouse a feeling of shame in many of our own academic centres, where, as yet, such branches of knowledge maintain a feeble struggling existence; and the particular book before us is an admirable example of its class. But for the facilities given by the issue of the series in which it appears it would hardly have been produced, and yet it throws a needed light on an economic topic of engrossing interest. The commercial position and prospects of Japan are matters which deserve large consideration in any forecast of the economic future of the world; but hitherto, as the author states, it has been difficult, if not impossible, for western economists to know with intimacy or precision the conditions of his country. They have witnessed with interest her advent to the ranks of civilised nations; they have acknowledged with an admiration, willingly or unwillingly extorted, the rapid progress which her people have made in the acquisition and practice of trade and industry; and they must feel that nations like their own cannot but regard her as a formidable competitor for the trade of the East, and perhaps the West, in the century which is opening. But they have not had the means of examining the actual foundations on which her economic structure has been built. They have not been able to penetrate with confidence into her economic past, or to explore her economic present. In Japan itself, as Dr. Kinosita states, the appearance of economic science is "only of the most recent date;" and the "ambitious minds" of the young Japanese have turned in other directions of speculative activity. "Japan," accordingly, "is virgin soil for the study and development of economic science;" and the "economic data given in" her "old literature" are "few and widely scattered." The author of this monograph candidly recognises in these words the difficulties with which he has had to contend; and he would, we imagine, hardly desire that his present work should be regarded as more than a tentative examination suitable for a place in the series in which it appears, of ground which subsequent inquirers may scrutinise with greater detail. But it lifts an obscuring curtain, and it whets our appetite for further inquiry of the same careful and competent character. In an Introduction and five chapters Dr. Kinosita summarises what is known of the "past and present" of Japanese commerce, of the "Finance and Economy of the Primitive Japanese," of their "early intercourse with Korea and China," and of such commerce as existed in the middle ages, of the "Beginning of European Trade," conducted in succession with Portuguese and Spaniards, with Dutch and with English, and then of the new awakening which followed on the "Restoration" of the central authority of the Mikado in 1868, and the overthrow of feudalism, with the development of transportation and communication, the reformation of fiscal and monetary systems, and the exhibition of wise and energetic governmental activity in various directions, which were among its most conspicuous consequences. Writing, as he does, with a competent knowledge of the general economic history of the Western world, he is able to examine the progress of Japan in relation to ideas which at different epochs governed the economic thought and business practice of Europe; and he brings an informed but independent mind to the consideration of such questions as Free Trade or Protection. Writing also, as he does, with an intimate acquaintance with the historical literature and the existing statistics of his own country, he is able to disclose to foreign students valuable information in a compendious shape, for which they would not know where to look without his aid. For Englishmen in a special degree his monograph abounds with interest, not only because England has to reckon with her new political ally as a competitor with her home, and (more especially) her Indian, industries for the growing custom of the East, but also because the geographical situation of Japan in relation to Asia and the Pacific is not unlike that which England has occupied with regard to Europe and the Atlantic. The approaching construction of the Trans-Isthmian canal by the Americans, and the opening of the interior of China may, in the twentieth century, prove as important economic events as the discovery of America and the passage to India round the Cape were in the sixteenth, and they may affect Japan as those changes affected England.

They may easily, as Dr. Kinosita hints, work an equal transformation in the commerce of the world.

The British Railway Position. By George Paish. With an introduction by George S. Gibb. 322+xiv pp., 8vo. London: *The Statist*, 1902.

This book, which consists of articles reprinted from *The Statist*, might be described as a discourse, or a series of discourses, on a text approved by statisticians. For, as Mr. Gibb, the General Manager of the North Eastern Railway, observes in a candid but cautious preface, Mr. Paish urges two main points, "firstly, that more information" than English railway managers now "possess is needed" with respect to "several particulars of railway working; and, secondly, that more ought to be done, and can be done, in the direction of increasing train loads and waggon loads, and decreasing train mileage." In other words, statistical information which is not at present obtained by railway managers should be procured as the necessary preliminary to needed and advantageous railway reform. The text is but another version of the old adage that "knowledge is power;" and it would, we believe, be hard for any careful reader of these pages to doubt that Mr. Paish has proved the two points which he endeavours to establish. He has shown that English railway management is susceptible of great improvement in the "direction of increasing train loads and waggon loads," and he has also shown that the customary modes at present in vogue for obtaining and presenting railway statistics do not turn the keen sustained attention of the responsible authorities to these important possibilities. "English published reports," he states, "contain no information whatever as to the average receipts per passenger per mile, and per ton of freight per mile; no particulars as to the ton of passenger mileage, the train load, the car load, or the length of haul." Mr. Gibb frankly admits the impeachment, and in the case of his own railway he has recently taken some steps to supply the defect, although he is careful to add that the figures, when obtained, must be used with discrimination. The lack of such statistics, Mr. Paish acknowledges, has offered some serious obstacles to the establishment of his second point, and compelled him to proceed in some stages of his argument by inference or estimate. But in this case also he enjoys the substantial confirmation of the practical experience of Mr. Gibb, expressed with no less characteristic a caution against extravagant inference. What Mr. Paish here sets himself to prove is that American railways, and also Indian railways, are in advance of our English railways in the economies which result from increased train loads and increased passenger loads. The keen competition of American railways has compelled attention to a problem from which the "pooling" arrangements practised in England have diverted the notice of railway managers. Our English managers have tried to carry as much traffic as possible, and, to secure this end, promised to deliver goods as quickly as possible; but they have not been forced, like the American managers, to "handle the traffic cheaply for the purpose of winning profits from low rates." Mr. Paish first compares the premier English railway (the London and North Western), which, he contended in an early letter, "made practically no progress in the economical handling of either passenger or goods traffic in the past twenty years," with the "enormous reduction in costs effected by American lines," of which he takes the Pennsylvania railway as a typical illustration. In later chapters he supplements this comparison by a general examination of most of the other greater English railways, and in some cases, as in that of the Lancashire and Yorkshire, he is able to point to the beneficial results which have actually attended the partial experimental adoption of the changes which he has advocated. He recognises the difficulties in the way, and he allows that the circumstances both of the original construction and the present working of railways in England (in such matters as the cost of land and the provision of waggons) do not correspond in all respects with the conditions which prevail in the United States; but he has a more easy task when he tries to demonstrate that the increasing competition, which English business men have now to face, will compel them to demand with more insistent urgency increased economy of transportation; and that, even if the railways are not required immediately to respond to such demands, in their own interests the falling dividends of recent years might prompt the most diligent scrutiny of working expenses. That his letters, in spite of the fragmentary character incidental to their original publication, deserve to be presented in the more permanent form in which they now appear, will, we believe, be the verdict of all who read them; and in that verdict they will be supported, as we have seen, by the weighty opinion of Mr. Gibb. To the economic student they suggest irresistibly the reflection that "railway economics" are a fruitful subject of study; to the statistician they afford, as we have noticed, a fresh illustration of the necessity of good statistics for good administration.

Les Lois de la Population en France. Par S. Cauderlier, avec une Préface par E. Levasseur (avec Atlas de démographie statique et dynamique de 272 cartes). 184 + xix pp. Paris: Guillaumin et Cie., 1902.

In the discriminating but eulogistic preface which M. Levasseur has written for this treatise, and its accompanying atlas, the distinguished French statistician observes that the author has taken rank among those whose works demand the attention of all who concern themselves with the study of population, and that his ideas cannot be neglected or ignored. This claim, M. Levasseur states, rests on the dual foundation of the great mass of facts which M. Cauderlier has laboriously collected, methodically arranged, and carefully interpreted, and on the novelty and precision of the theoretical law which he has deduced from his material. He has gathered together all the statistical data which could contribute to a knowledge of his subject. He has shown, for every department in France, the "nuptialité," or the ratio of the marriages to the total population, the "matrimonialité," or the ratio of the marriages to the marriageable women who are not married, the "natalité," or the ratio of the births to the total population, the "fécondité légitime," or the ratio of the births to the number of married women between 15 and 45 years of age, the "fécondité illégitime," or the ratio of the births to the number of unmarried women between the same ages, the mortality, the survival of the male and the female sex, and the total increase of the population. These figures are taken out and given for quinquennial periods for the forty years from 1852 to 1891, and are graphically represented in the accompanying atlas of 272 coloured maps. Of the service which M. Cauderlier has thus rendered to statistical science by the careful and skilful execution of this great undertaking there can, as M. Levasseur remarks, be no dispute, and on this account alone he would be entitled to a high place among the writers who have studied the question of population, from Malthus onwards to M. Lavasseur himself. But this statistical work is preliminary and subordinate to the enunciation of a general "law" of population, and, while M. Levasseur recognises a comprehensiveness which renders this law superior to those suggested by many previous authors, he doubts whether the diverse circumstances and changing conditions of men admit of the exact precision which M. Cauderlier attributes to it. The law is a statement in more rigorous form of principles which M. Levasseur himself had previously laid down; and it certainly affords significant proof of the progress made in the study of population since Malthus wrote his remarkable essay. It is this: "The requirements and means of satisfying the needs of life regulate the movements of population as a whole and in their essential parts." This conception of the determining factors of the growth and decline of population is more comprehensive than the old Malthusian formula in the degree in which the "needs of life" (which must themselves be liberally interpreted) are wider than the Malthusian "means of subsistence;" and Malthus himself, as M. Cauderlier argues, took little or no account of the increasing productivity of human labour. From this law M. Cauderlier draws the conclusion that it is possible to infer from the fact of a declining population, such as that of France at the present moment, that the country, or certain parts of it, are growing poorer, in the sense, that is, of an increasing disproportion between resources and needs. M. Levasseur questions the precision and universality of the inference. The cautious reader will, we think, be inclined to agree with him, but none the less he will readily and gratefully acknowledge the service which M. Cauderlier has rendered by the enunciation and application of his law to the solution of some hard perplexing problems. He is enabled with its assistance to reconcile facts which might otherwise seem inconsistent. He has little difficulty in showing that his own view is more accurate, because it is more comprehensive, than the narrower explanations of the declining population of France given by M. Leroy Beaulieu and others. He supplies a crucial test for gauging the efficacy of the remedies suggested for this decrease in modern France as in ancient Rome; and his subordinate and complementary laws of marriages, of births and of deaths, fall naturally into an appropriate place when they are connected with his general law. As M. Levasseur remarks in the concluding paragraph of his preface, M. Cauderlier has added to a rich harvest of statistics, and to acute suggestions in demography, a theory, logically constructed, which may possibly fail to explain fully all the facts, but which at least points the way to a route by which the true meaning of a great number of phenomena may be effectually discovered.

Statistical Studies in the New York Money Market. By John Pease Norton. 108+vi pp. New York: The Macmillan Co., 1902.

In one of his letters Jevons expressed the belief that he possessed a "capacity of seeing the sameness and the difference of things." It was this which enabled him to realise his early ambition of becoming a "recognised statistical writer." The statistical studies now before us forcibly recall this remark. They are conducted in a region closely connected with those investigations of the periodic fluctuations of prices by which Jevons won his statistical fame; they are designed, like his inquiries, to exhibit the "correlations" of economic phenomena; they make a large and apt use, for the purpose of illustrating and advancing the reasoning, of the graphic method, which, as he showed, conduced to the detection of the "sameness and the difference of things;" and the practical suggestion with which Dr. Norton concludes his studies, "that foresight in business may in the future be vastly increased," would, we believe, have commanded the warm approval of the earlier statistician. On the other hand, the actual methods pursued by Dr. Norton furnish evidence of the development which such study has undergone since Jevons wrote. Dr. Norton has successfully applied to the problems of money and credit the statistical methods recently used by Professor Karl Pearson in investigating the biological problems of evolution. He commences his monograph with a "brief analysis" of the phenomena considered in the theory of money and credit. He then states and explains the statistical material which he has used; and he exhibits in successive chapters its characteristics as revealed by methods which he applies, and then in his concluding pages, to which the earlier sections are preliminary, he discloses and examines the "correlations" found in the New York money market between the "Call Discount Rate" and the "Ratio of Reserves to Deposits," between the "Call Discount Rate" and the "Percentage Deviations of the Total Reserves," and between the "Reserves" and "Loan Periods." Throughout his work, although he employs the finer and more elaborate instruments of later reasoning, he is engaged, like Jevons, in separating the shorter and more superficial variations from the longer and deeper. The relations of statistical inquiry to economic theory find now as then their most appropriate illustration in such studies. As Dr. Norton himself aptly remarks, "theory and statistics are the two legs of economic science." The "phenomena of economics lend themselves far more readily to prediction than do the phenomena of meteorelogy;" but such prediction "can come only through the finer methods of statistical analysis." Dr. Norton has, we think, shown himself a competent follower of Jevons. He has handled with success the more subtle and refined methods which he has utilised, and his results are no less interesting than they are suggestive.

Die Reichsfinanzreform inbesondere vom staatsrechtlichen Gesichtspunkte. By Dr. Georg von Mayr. 36 pp., 8vo. R. Oldenbourg, Munich and Berlin, 1902.

This is, in substance, a paper read by Dr. von Mayr, the well-known statistician, before the Legal Society at Munich. There are two fundamental questions to be answered in considering the finances of a kingdom. The first is a quantitative one—is the income of the State sufficient to enable it to carry on its State duties in an efficient way? If we answer this in the negative, the second question is how the sources of income of the State are to be strengthened. Both these questions, so far as they concern the German Empire, are briefly dealt with in this paper. In answer to the first, it seems that the Empire has not yet a sufficient income for its purposes. The continued and increasing indebtedness is a sufficient proof of this. Coming then to the second question, Dr. von Mayr first considers whether the quota of the individual States should be increased, and negatives this suggestion. This means that Imperial and State taxes must be looked to for the increased income. For various reasons additional direct taxation is undesirable, and this drives us to the conclusion that additional Imperial indirect taxation is required in the German Empire.

Der moderne Kapitalismus. By Werner Sombart. Vol. i. *Die Genesis des Kapitalismus.* 669 + xxxiv pp., 8vo. Vol. ii. *Die Theorie der Kapitalistischen Entwicklung.* 646 pp., 8vo. Leipzig: Duncher and Humbolt, 1902.

The scheme and aim of this large work on modern capitalism are explained by the author in an interesting preface. Since the decay of Roman civilisation and culture, there have been three great epochs in the industrial life of the European peoples. In the first, feudalism reigned. In the second we find an organisation of industry by hand workers the ruling feature. In the third, in which we now live, the organisation is capitalistic: the ruling idea is that money-making is the object of industry; calculation or speculation claims the activities of many people. The fourth epoch will be one of socialistic characteristics. The present book aims at showing the development of the capitalist system from its beginnings up to the present time. The object of Herr Sombart is to trace the laws of the present capitalist industrial system, and to show how it will pass over into the future industrial system. We begin with industry in the stage where it is mainly carried on under the *régime* of manual labour; then the beginning of the capitalist system is described, both from the point of view of the actual accumulation of capital and also from the psychological point of view, which is concerned with the birth and growth of the capitalist spirit. The development of capitalism is then traced up to its final triumph at the present time, and the present position of manual labour and the manual labourer is fully described. So far we have been dealing in the main with historical or descriptive economics. In the second volume we proceed to the theory of capitalistic development.

The author considers that previous writers have not attacked the right problem. "In my opinion," he says, "all previous investigators have examined the competition between industry on a large scale and industry on a small scale (*Grossbetrieb und Kleinbetrieb*), while in fact the question is an entirely different one. It is not a question of the competition between two *Betriebsformen*, but of that between two *Wirtschaftsformen*"—(it is better to leave the German words, as a translation would only be misleading)—"namely, that of manual labour and a capitalistic undertaking. It is therefore the chief object of the following exposition to clear this error entirely out of the discussion." The following is an abbreviation of the "Scheme of Competition," which gives in outline the arrangement adopted in this part of the book:—

The competition for the best execution of the work—
  A. The quality of the offer of the goods.
  B. The quality of the goods offered.
The competition in price—
  A. The formal superiority.
  B. The material superiority.
    I. Cheapening through changes in quality.
    II. Cheapening through changes in quantity.
      1. The cheapening of the factors of production.
      2. The cheapening of production.

It is worth while to point out this arrangement, because it shows that we are here given a most complete and detailed examination of the actual way in which competition works. Economic theorists are too liable to regard the matter as a mere question of price, without much further analysis. An elaborate investigation, such as the one we are considering, which takes up about half of the second volume under review, is therefore most valuable. Thus what value does the consumer attach to quick delivery of the goods as compared to their quality or cheapness? Evidently in many cases quick delivery is an attraction of the greatest importance. It is highly valued by most people, but it requires a considerable investigation to see how important or not such a fact is. Herr Sombart's book is, therefore, one of considerable interest, quite apart from the correctness of his actual views. It suffers slightly from a certain overstiffness of arrangement, which is so common a feature of German books, but this is a defect on the right side, and only enables us the more quickly to grasp the logical sequence of his ideas, and the more easily to find those portions of the work which are of special interest to us.

Histoire des Classes ouvrières et de l'industrie en France avant 1789. By E. Levasseur. Vol. i, 715 + lxxxviii pp. Vol. ii, 988 pp. Paris: Arthur Rousseau, 1901.

More than forty years ago M. Levasseur published his *Histoire des classes ouvrières en France depuis la conquête de Jules César jusqu'à la Révolution*—a work based upon a study crowned by the *Académie des Sciences morales et politiques.* Some years afterwards this history was continued up to the year 1867 in a book called *Histoire des classes ouvrières en France depuis* 1789 *jusqu'à nos jours.* Since that date an enormous quantity of new material has been produced; the bibliography of the subject has become very large. The publication of the *Inventaires sommaires des archives departementales et des archives communales* extends into hundreds of volumes. M. Levasseur has therefore had a task of enormous magnitude to perform in producing the second edition of the first of his two works already referred to under the title *Histoire des classes ouvrières et de l'industrié en France avant* 1789. This second edition is not a mere re-publication of the first edition brought up to date, with a few additions and improvements, but is almost entirely rewritten, and contains nearly twice the amount of matter comprised in the earlier work. The original division into seven books has been kept, although the number of chapters has been altered. It is most interesting to trace the varying fortunes of the workmen and of industry in France during the nineteen centuries with which M. Levasseur's book deals. Unfortunately but little is known of Gaul before the Roman Conquest. We know something of the products of industry, but little of the conditions of production. With the Roman conquest, under the influence of Roman civilisation and Roman identical organisation we find *collegia* (the ancestors of guilds and trade unions) coming into existence. In the third century these were authorised and encouraged. It is most interesting to note the change of opinion which gradually imposed greater obligations upon these institutions, till in the fourth century members of a *collegium* were kept there by force as if in a prison. The invasions of the fifth century were disastrous in their economic effect, and Roman civilisation was swamped by barbarism. From the fifth till the tenth century industry and the arts were at a low ebb, and the position of the artisan must have been one of great distress. It remained for feudalism in the eleventh century to give some social organisation, and it became possible for villages to subsist under the shadow of a castle. In the twelfth century we find a considerable improvement. The bourgoisie begins to exist. The communes, with an internally independent life, chosing their own mayors or consuls, become an important feature in the social order. The miseries of the Hundred Years' War did not entirely destroy the corporate spirit, and after the war we find corporations not merely of trades but of persons united into *confréries.* With the sixteenth century prosperity, or at any rate a relative prosperity, begins to reappear, until the religious wars again made France desolate. Henry IV at last restores order and peace by the treaty of Vervins and the Edict of Nantes. With Louis XIV we come to Colbert. M.

Levasseur's opinion of him is sufficiently interesting to economists to bear quotation. "Colbert est au premier rang parmi les ministres de valeur dont Louis XIV sut se servir; homme ambitieux mais très laborieux, ministre passionné pour l'ordre, autoritaire par tempérament, mais serviteur souple et dévoué du roi, il sut comprendre les besoins industriels et commerciaux de la France, et il mit à les servir la justesse de son esprit et la force de sa volonté si bien que le royaume n'avait jamais paru plus florissant, et qu'en réalité jamais la manufacture et le commerce n'avaient puis jusque-là un aussi large essor. S'il a commis des erreurs de doctrine, il a rendu d'autre part des services si considérables qu'ils feraient pardonner bien des fautes." The eighteenth century brings us to Law and his paper currency; to the minute restrictions on commerce and industry, in spite of which industry flourished; and finally to the revolution.

It is pleasant to find that after so long an interval, which M. Levasseur has in the main devoted to geography and demography, he should have returned to the subject which he treated so brilliantly in his youth, and should have given the world a great book; for to consider this as a mere second edition is to fail to do justice to the enormous amount of research which has been necessary in order to re-write these two volumes. The bibliography of the subject has become so large that want of space has prevented it from being incorporated, but students will find it in the *Séances et travaux de l'Académie des Sciences morales et politiques.*

Studi sugli Effetti delle Imposte. By Luigi Einaudi. 288 + 1 pp., 8vo. Turin: Fratelli Bocca, 1902.

The economic problems relating to the incidence of rates, the effect of rates on the house rent, the incidence and effect of taxes on site values, the taxation of increased increments, and what is, for want of a worse term, known as "betterment," are at the present time of practical importance in the United States of America and in European countries. But in the United Kingdom a special interest and an additional importance has been given to them by the Report of the Royal Commission on Local Taxation, and especially by the Lord Balfour of Burleigh's report on the taxation of site values. Signor Einaudi's book is a careful and detailed investigation into the effect of taxes on the rent of land and houses, and although he is naturally specially interested in the system of taxation existing in Italy, yet he makes so much use of English economic authorities and English reports, that his book should have a special interest for Englishmen. He begins with a consideration of the building industry and its relation to the general economic equilibrium; then follows an analysis of the supply of houses and the cost of the various factors of production; then comes an analysis of the demand for houses, and of the demand for houses of a special character and for special purposes. From this analysis of supply and demand we proceed to the determination of the rent, both the total rent and the rent of the various parts and of *quasi* rent. This analysis is contained in the first chapter, and is a necessary introduction to the problem of the shifting incidence and effects of taxes on houses. This problem Signor Einaudi attacks in the second chapter; but for clearness and simplicity of analysis he begins by discussing the effect of a tax first on the rent of the site, then on an increment of capital value to the site, then on the net return on the capital expended in building the house. From this he passes to a tax on the net return on the capital expended, and on the rent of the site, and thus he arrives at the general problem, which is discussed in considerable detail, taking various hypotheses. Chapter II, therefore, results in giving us a general theoretical solution which is a first approximation to the practical problem. A second approximation is then made, that is to say, in Chapter III the author discusses the disturbing circumstances caused by technical or legal difficulties and the shifting of the taxation which may result from these. Then he discusses carefully the vexed question of valuation and of the effect of contracts between landlord and tenant upon the ultimate incidence of the tax. The final chapter deals with the effects of the Italian system of taxation, and may be considered as the third approximation to the theoretically and practically perfect solution of the problem. The excellent logical arrangement and development of the subject in the manner outlined above makes Signor Einaudi's book most useful and convenient. There are few works which deal with a subject of such practical importance, and theoretic as well as practical difficulty, in a manner in which the theoretical and practical difficulties are so clearly separated and yet so justly blended as the author proceeds further into the subject. The vigour of the Italian economists in writing treatises is beginning to put to shame the economists of some other countries, and this book, which form the fortieth volume of the *Biblioteca di Scienze Sociali*, will add to the repute of that well known series.

La Monnaie le Crédit et le Change. By Aug. Arnauné. 431 + viii pp., 8vo. Paris: Felix Alcan, 1902.

The first edition of M. Arnauné's work on money appeared in 1894, and it is surprising to reflect how many monetary events of considerable importance have happened since then. The adoption of the gold standard in India, in 1899, is perhaps the most important of them, but the general course of events, from the date of the Wollcott mission in 1897, if not indeed from the closing of the Indian mints in 1893, has been to cause gold monometallism to triumph over bimetallism, so that the monetary situation is ceasing to be a prominent feature in either English, American, or Continental politics. While political partisanship ran high it could hardly be expected, and would indeed have been undesirable, that the economists and monetary experts should not have taken sides, and taken them vigorously. But at the present time we may hope for an impartial and balanced consideration of the controversies of the last fifteen or twenty years which would barely have been possible in 1894. In 1894 it would have been too much to expect that M. Arnauné should have treated matters so impartially that the reader remained in doubt of his political opinions (on monetary questions), but in 1902 one is entitled to demand that it shall not be very obvious that M. Arnauné is a strong monometallist. This is the only defect in the book, and it is a slight one, but it some times causes M. Arnauné to be, as it seems to us, a little incomplete in dealing with the question of the appreciation of gold.

The descriptive parts of the work are most admirably done; the writing is clear and lucid, nothing seems to be omitted, and yet there is no sense of overcrowding. It is interesting to find that, in addition to the four functions of money as stated by Jevons, M. Arnauné adds a fifth, that it is an instrument for the transport of wealth, especially useful in international relations. The first part of the book, which deals with the instruments and mechanism of currency, not only contains an admirable account of money, but also of the foreign exchanges and of the manner in which the foreign exchanges affect the monetary situation. M. Arnauné's position as director of the French mint enables him to give the most detailed and valuable accounts of the actual operation of coinage and the experiments made in France as to the best proportion of alloy. The second part of the book contains most excellent accounts of the monetary systems (so far as relates to metallic money) of France, the Latin Union, England, Germany, the United States, and Indo-China. The account of the money of the latter is most fascinating reading, and it is instructive to see the various attempts made by the French local government to obtain a decent currency. From their mistakes there is much to be learnt, and the student of currency could hardly do better than study the application of the principle of monetary theory under the curious and difficult conditions which have prevailed in Indo-China. What are we to think of a "ligature" of 600 sapèques (a round piece of zinc or copper with a square hole in the middle) whose weight is over three pounds, and whose value has descended to less than one penny halfpenny? It is extremely difficult to see how the ordinary transactions of life could be carried on at all under such circumstances. Yet we hear that the inhabitants are greatly attached to the sapèque, and that it is convenient for the small transactions which their limited needs and resources permit. Systems of fiduciary circulation form the matter of the third part of the book. The French, English, and American systems of bank notes are most lucidly explained, and the system of inconvertible notes which existed at various times in those and other countries are all expounded with the same clearness and accuracy.

Since the publication of Jevons's book on money so much has happened that, in the course of time, it is to be expected that some other book must take its place. M. Arnauné's book is admirably fitted to do this. It has all the merits which such a book should possess. The amount of matter is very considerable, but it is contained in a very small space without being cramped. The technical details and descriptions of coins, of the operations of banking and exchange, are wonderfully clear. Lastly, the book is up to date, a fact which is of great value and importance to the man of business as well as the student. We can only re-echo the judgment of M. Léon Say, who describes the first edition as "très complet, très scientifique, et très pratique."

Leerboek der Staathuishoudkunde. By N. G. Pierson. Vol. i, 671 + xxii pp., 8vo. Vol. ii, 715 + xv pp., 8vo. Haarlem: F. Bohn, 1896-1902.

The publication of the second edition of Dr. N. G. Pierson's celebrated treatise on political economy is now complete. The first edition appeared in 1884 and 1890, the first volume of the second edition in 1896, the first part of the second volume in 1897, but the second part of the second volume has only quite recently appeared. An English translation of the first volume is on the point of appearing, and a translation of the second volume will appear in due course. This is very satisfactory news for economic students who are not acquainted with Dutch, but the careful and appreciative reviews by Professor Edgeworth have made this work familiar to those who have not been able to read it in its original language.

Complaint is often made that political economists are not men of affairs, and that the professor's chair is not the best place in which to study the workings of industry and commerce. Whether or not in general such complaints are justified, at any rate they would be singularly wide of the mark in the case of the foremost economist of Holland. He is a man of business and a statesman. Dr. Pierson was born in 1839, and had a commercial education. From 1860 to 1864 he was a merchant; during the next four years he was manager of a Colonial bank having its head office in Amsterdam. In 1868 he became a member of the Board of Directors of the Netherlands bank, and governor of that institution in 1885. On becoming Minister of Finance, in 1891, he resigned his position as governor. He was out of office from 1894 to 1897, and again from August, 1901, to the present time. It will be noticed that the different parts of the second edition have appeared during the periods when Dr. Pierson was out of office. Concurrently with being a director of the Netherlands bank, Dr. Pierson was professor of political economy at Amsterdam from 1877 to 1885. We see from these facts that the author of the *Leerboek der Staathuishoudkunde* is a man of remarkable experience in the world of business and in the affairs of State, and this knowledge enhances the value of his treatise.

The plan of this work, which differs somewhat from that usually followed, is determined by the author's views. He begins by attacking the opinion so frequently held (*e.g.* by Rau and Menger), that a rigid distinction should be made between economics as a science and economics as an art, and contends with great force that no clear boundary line can be drawn between explaining and prescribing economic rules. As economic laws always have a direct bearing upon, or else presuppose commercial transactions, and as commercial transactions are transactions in exchange, Dr. Pierson considers that a treatise on economics should begin by explaining exchange and value in exchange. Hence value in exchange forms the subject of the first part of the treatise. Then because exchange presupposes instruments of exchange, money forms the subject of the second part of the treatise. These two parts form the first volume. The third part, which fills the first part of the second volume, deals with production. The fourth part (which is the portion of which the second edition has just been published) treats of the revenue of the State, and forms rather an appendix or special application of economic science to the theory of finance than an integral part of an exclusively economic treatise.

The chapter on the origin of value in exchange begins with the distinction between economic goods (that is goods of which the supply falls short of the demand) and non-economic goods. This brings us to the distinction between the use of the word "value" as applied to a class of things, and value as applied to a definite quantity of a thing. Thus air and water have value in the sense that they are goods, but a given cubic foot of air or water may be said to have no value. In this sense of the word only economic goods possess value. From this we pass on to the causes which determine value, and then to the theory of marginal utility. It is certainly very convenient to approach the matter in this way. The reader gets right into the heart of the central problem of exchange, and is then in a much better position to comprehend and appreciate the rest of the subject. Want of space prevents us from giving any detailed account of the contents and treatment of the remainder of the book, but the following very short sketch will serve to indicate its general scope. The rent of land, the rent of houses, the incidence of different forms of taxation of houses, interest on capital, the profits of *entrepreneurs*, the wages of labour and prices, are all treated in a way which combines theory and realistic fact in a masterly manner, and with special reference to the questions of to-day. Thus some modern housing schemes are severely criticised. In Dr. Pierson's view the three best remedies for bad housing conditions are (*a*) the condemnation of houses unfit or unsuitable for dwelling accommodation; (*b*) the framing of stringent rules for the construction of new dwellings, and (*c*) limitation of the number of persons it shall be lawful to house in a given cubic space. But he is not opposed to all other methods, and instances the scheme adopted in Amsterdam as one of some merit. There the municipality promoted a limited company, to whom they agreed to grant loans to the amount of 150,000*l.* at 4½ per cent. per annum. The company was to be furnished with land free of charge, but had to apply the whole of its profits to the repayment of the loans, and after these had been paid off, to make over the land and all the houses that had been built on it to the municipality. The shareholders of the company had to subscribe capital, which served as security for the company's liabilities, and remained invested in the 2½ per cents (national debt). This scheme was quite successful, and, in fact, cost the shareholders nothing.

On the meaning of the word "capital" Dr. Pierson's views differ a good deal from some which are current at the present time. He applies the word only to material products, and excludes land from the category of capital. No doubt the definition of capital should depend partly on every day usage and partly on scientific convenience, and where the every day usage is so ill defined as it is with reference to the word capital, it is no doubt justifiable to base our definition chiefly on scientific convenience; but in England at any rate, for many purposes various rights or immaterial advantages (*e.g.*, patents or goodwill) are constantly classified as capital, and it may be that the distinctions drawn by Dr. Pierson are more suited to Holland than to this country. To pass on to another point, members of the Statistical Society would naturally be interested in the author's opinion of the adequacy of index numbers as a method of determining the average level of prices. Here our author is very (perhaps too) cautious. But as the method has already been a subject of controversy between such great authorities as Professor Edgeworth and Dr. Pierson himself (see *Economic Journal*, vol. vi, p. 132), no more need be said here. In the part of the volume which treats of money, we may specially refer to the section on the money of Holland and her colonies. Not only is Dr. Pierson particularly fitted to deal with the subject—a reason which alone would suffice to make this portion of the book particularly interesting—but the history of the Dutch currency is not, as a rule, adequately treated in the ordinary treatises on money. When we come to the theory of the foreign exchanges, it is most interesting to find that Dr. Pierson thinks there is a flavour of mercantilism about Lord Goschen's theory that the movements of the foreign exchanges show the direction in which capital is moving or about to move. Finally, on the vexed question of bimetallism, one quotation of a few lines may be allowed us: "The mistake of the past lay in not recognising the fact that Gresham's law (according to which the under-rated is supplanted by the over-rated metal), though indeed an obstacle to the successful working of the double standard when applied to a small area, is a positive guarantee for its successful working when applied over a very wide area."

The volume on production devotes a good deal of space to Malthus's theory of population, and to the various attacks on and criticisms of it, and to production from cultivation of land. The methods of mediæval land tenure and cultivation in England, France, Holland, and Germany are all explained, and the modern question of the nationalisation of the land is discussed. Dr. Pierson does not think it clear that nationalisation would be followed by an increase in production. But enough has been said. Perhaps the appearance of the English translation will afford a second opportunity of picking out some of the salient points of this work of established reputation.

Statistical and Economical Articles in Recent Periodicals.

UNITED KINGDOM—

Economic Journal. June, 1902—American "Trusts" and English Combinations: *Hon. E. Hubbard.* Austrian-Hungarian Trade policy: *E. von Philippovich.* The financial control of Local Authorities: *P. Ashley.* The relief of the poor in Jersey: *Beatrice Lander.* On the need of a Valuation Act: *W. M. J. Williams.* The Brussels Sugar Conference: *E. Castelot.* Notes on the Budget: *C. Bastable.* Local Authorities and the Housing Problem: *Lettice Fisher.*

Economic Review. July, 1902—Political life in Australia: *P. F. Rowland.* Workshop Organization: *A. P. Loscher.* The Poor Law and the Economic Order: *T. Mackay.* Dock Labour in Ipswich: *Rev. A. J. Allen.* Small Farming in Yorkshire: *Rev. J. L. Kyle.* Some Notable "King's Merchants":—I. Anthony Pessaigne of Genoa: *Alice Law.*

Journal of the Board of Agriculture. June, 1902—Agricultural Credit Banks: *H. O. Devine.* Cattle Insurance in Bavaria: *E. Brown.*

Journal of the Department of Agriculture and Technical Instruction for Ireland. June, 1902—German Chemical Industries. The Peat Industry in the Province of Schleswig-Holstein: *J. T. Tatlow.*

UNITED STATES—

American Statistical Association, Publications. June, 1902—What is the Center of an Area, or the Center of a Population?: *J. F. Hayford.* Element of Labor in Railway Expenditure: *A. L. Horst.*

Annals of the American Academy of Political and Social Science. July, 1902—Social Effects of Transportation: *M. A. Knapp.* Industrial Conciliation and Arbitration. The Housing Problem. The Child Labor Problem. Tendencies of Factory Legislation and Inspection. Juvenile Courts.

Political Science Quarterly. June, 1902—Friendship and Politics: *M. K. Simkhovitch.* England and the American Colonies: *H. L. Osgood.* The English Parish. I: *S. and Beatrice Webb.* Municipal Lighting in Massachusetts: *A. D. Adams.* Accident Insurance for Working Men: *A. F. Weber.* Economic Interpretation of History. III: *E. R. A. Seligman.* Patten's Theory of Prosperity: *A. S. Johnson.*

Quarterly Journal of Economics. August, 1902—The Variation of Productive Forces: *C. J. Bullock.* The Isthmian Canal; Factors affecting the choice of Route: *E. R. Johnson.* Recent tendencies in Sociology: *E. A. Ross.* The United States Industrial Commission; Methods of Government Investigation: *E. D. Durand.* Recent Events in the New England Cotton Trade: *A. T. Lyman.* The American Workmen's Compensation Act: *G. E. Barnett.*

UNITED STATES—*Contd.*

The Yale Review. August, 1902—Distribution of Urban Land Values: *R. M. Hurd.* The Connecticut Convention: *C. H. Clark.* American statistical practice. I. The Interstate Commerce Commission: *H. T. Newcomb.*

Monthly Summary of Commerce and Finance, 1902—

April—Commercial Africa in 1901.

May—Commercial Alaska in 1901. Great Canals of the World.

June—Annual Review of the Foreign Commerce of the United States. The Iron and Steel industry in 1901. Thirty-five years of Pig Iron.

Bulletin of the Department of Labor, 1902—

No. 38, *January*—Labor conditions in Mexico: *W. E. Weyl.* The Negroes of Cinclare Central Factory and Calumet Plantation, Louisiana: *J. B. Laws.* Charts exhibited at the Pan-American Exposition.

No. 39, *March*—Course of wholesale prices, 1890 to 1901.

No. 40, *May*—Present condition of the hand-working and domestic industries of Germany: *H. J. Harris.* Workmen's Compensation Acts of Foreign Countries: *A. F. Weber.* Working of compulsory conciliation and arbitration laws in New Zealand and Victoria. The Compulsory Arbitration Act of New South Wales.

No. 41, *July*—Labor conditions in Cuba: *V. S. Clark.* Beef prices: *F. C. Croxton.* The True Reformers: *W. T. Thom.*

AUSTRIA—

Statistische Monatschrift, 1902—

June, July—Die Grundbesitzverhältnisse von Vorarlberg: *W. Schiff.* Die Infectionskrankheiten in Oesterreich während des letzten Decenniums, 1890-1899: *Bratassević.* Oesterreichs Sparcassen im Jahre 1900. II: *H. Ehrenberger.*

August—Ueber die Vertheilung des Grundbesitzes in Nieder-Oesterreich: *W. Schiff.* Die Feuer- und Hagelschäden Oesterreichs und deren Entschädigung durch Versicherung in den Jahren 1897 und 1898 im Vergleiche mit dem fünf- und fünfzehnjährigen Durchschnitte der Jahre 1884 bis 1898: *K. Kraft.* Ergebnisse der Volkszählung vom 31 December, 1900, in den Ländern der ungarischen Krone: *J.*

FRANCE—

Annales des Sciences Politiques, 1902. *July*—La déclaration des droits de l'homme et du citoyen et M. Jellinek: *E. Boutmy.* Les finances du Japon: *R. G. Lévy.* La France à Kouang-Tchéou-Ouan: *J. Silvestre.* L'homme qui vient: Lord Rosebery: *P. Hamelle.* Les finances du Consulat: *E. d'Eichthal.*

Journal des Économistes, 1902—

June—Nouvel examen du Protectionnisme: *G. de Molinari.* Travaux des Chambres de Commerce: *M. Rouxel.* Un nouveau rouage financier aux États-Unis "The Security Holding Company": *G. Nestler-Tricoche.* Le droit sur les blés en Angleterre et la Fédération Libre-Échangiste Internationale.

FRANCE—*Contd.*

Journal des Économistes, 1902—*Contd.*

July—Essai sur le commerce international: *Y. Guyot.* Législation et controle des compagnies d'assurances: *E. Rochetin.* Le parlementarisme industriel: *R. Dupond.* Les trusts et la concurrence.

August—La production et le commerce du travail: *G. de Molinari.* La solidarité économique et l'économie solidariste: *H. L. Follin.* Le mouvement agricole; le beurre et la margarine: *L. Grandeau.* L'éducation de la prévoyance: *A. de Malarce.* L'économie socialiste de l'effort: *H. Bouët.*

Journal de la Société de Statistique de Paris. 1902—

May—Ce qu'on appelle la féodalité financière: *A. Neymarck* (*concluded in June*). La statistique sanitaire dans les villes de France et d'Algérie: *Dr. Lowenthal.*

June—États-Unis; Tableau récapitulatif des prix de 261 marchandises, classées par groupes, de 1890 à 1901. Les contrats de mariage en France: *F. de Saint-Genis.*

July—La répartition des revenus en Autriche: *P. des Essars.* La population de la Suisse en 1900: *P. Meuriot.* Le recensement des industries et métiers effectué en Belgique le 1^er^ décembre, 1896: *L. March* (*concluded in August*). Y a-t-il des périodes pour les mariages et les naissances, comme pour les crises commerciales? *C. Juglar.*

August—Du centre mathématique d'une population: *P. Meuriot.* Élections philanthropiques: *A. Bénard.* Dénombrement de la population.

Revue d'Économie Politique. 1902—

June—Le Homestead en France et en Algérie: *J. Leveillé.* De la condition légale des étrangers en France au point de vue de l'exercice des professions commerciales ou industrielles, soit comme patrons, soit comme salariés: *P. Pic.* Une nouvelle loi de la population: *J. Wolf.* Quelques considérations sur le privilège des bouilleurs de cru et la loi du 29 décembre, 1900. IV: *A. Korn.*

July—L'impôt global sur le revenu et la propriété foncière. Les théories et les faits: *E. Villey.* Heures de travail et salaires dans l'industrie belge: *E. Waxweiler.* Le billet de banque à cours forcé dans la République Argentine: *F. M. y Herrera.* Les banques anglaises: *G. François.*

August, September—Comment il est possible d'organiser les ouvrières en chambre: *E. Schwiedland.* Le mouvement coopératif en Belgique et ses résultats: *L. Bertrand.* L'interdiction du travail de nuit des femmes en France: *G. Martin.* La première sucrerie co-opérative hollandaise: *G. de Leener.*

La Réforme Sociale. 1902—

No. 11—La Constitution française et les lois anti-françaises: *E. Vigouroux* (*concluded in No.* 12). L'industrie dentellière en Belgique: *P. Verhaegen* (*concluded in No.* 12). La fortune de la France et nos charges fiscales: *Hubert Valleroux.*

No. 12—Une réforme municipale de la contribution mobilière, à propos du remplacement de l'octroi: *Duval-Arnould.*

FRANCE—*Contd.*

La Réforme Sociale. 1902—*Contd.*

No. 13—Compte rendu de la réunion annuelle.

No. 14 *et No.* 15—La jeunesse et les souffrances sociales: *G. Picot.* Le "Bon grain" et les œuvres sociales de Mariemont: *V. Mabille.* L'assistance par le travail et le chomage des couturières à Paris: *L. Rivière.* Les associations d'anciens élèves des établissements primaires et secondaires libres; projet de fédération: *F. Gibon.* Le rôle social du propriétaire foncier dans les associations agricoles.

GERMANY—

Allgemeines Statistisches Archiv. 1902. *Halbband* 1. Die mannigfachen Beziehungen zwischen Statistik und Medizin; *F. Prinzing.* Ein moderner Statist: *G. v. Mayr.* Ueber die Notwendigkeit systematischer Arbeitsteilung auf dem Gebiete der Bevölkerungs—(Sozial) Statistik: *H. Bleicher.* Aus der Geschichte der Schwedisch-Finnländischen Bevölkerungsstatistik: *A. Hjelt.* Die Lohn-statistik in der Theorie und in der Praxis: *R. P. Falkner.* Die belgische Industrie- und Gewerbestatistik von 1896: *E. Waxweiler.* Das Zählblättchen und der britisch-indische Zensus von 1901: *G. v. Mayr.* Die neuen Zählkarten für die Statistik der österreichischen Arbeiter-Unfallversicherung: *K. Kögler.* Die Kindersterblichkeit in Oesterreich: *F. Prinzing.* Bevölkerungsbewegung im Hällischen seit Mitte des 16 Jahrhunderts: *J. Gmelin.*

Jahrbuch für Gesetzgebung, Verwaltung und Volkswirtschaft. Heft 3, 1902—Autorität. Ihr Ursprung, ihr Begründung und ihr Grenzen: *L. Stein.* Die verkehrswirtschaftliche Bedeutung der Binnenwasserstrassen: *G. Seibt.* Zur Charakteristik der englischen Industrie, II: *W. Hasbach.* Der dualistische Ständestaat in Deutschland: *F. Rachfahl.* Das Feudalsystem in Kanada: *W. B. Munro.* Der Bauernschutz in den deutschen Territorien vom 16 bis ins 19 Jahrhundert: *O. Hötzsch.* Zur Kritik der ungarischen Industriepolitik: *J. Bunzel.* Die deutsche Cementindustrie, ihre Entstehung, gegenwärtige Lage und ihr Konkurrenzkampf auf dem Weltmarkt: *P. Mohr.* Frauenarbeit in Frankreich: *Käthe Schirmacher.* Kolonisation im spanischen Südamerika (1. La Plata-Staaten): *C. Ballod.* Deutschland am Scheidewege: *A. Weber.*

Jahrbücher für Nationalökonomie und Statistik. 1902—

June—Die Grundlage der künftigen deutschen Handelsvertragsverhandlungen. Die sozialen Verhältnisse der Juden in Preussen und Deutschland: *A. Ruppin* (*concluded*). Die Zunahme der Bevölkerung in den hauptsächlichsten Kulturstaaten während des 19 Jahrhunderts. Der Stand der deutschen Erwerbs- und Wirtschaftsgenossenschaften: *H. Crüger.* Ein neues Volkszählungsverfahren für die Vereinigten Staaten von Nordamerika: *F. W. R. Zimmermann.* Zur Geschichte und Organisation der dänishchen Meiereigenossenschaften und der dänischen Meiereiwirtschaft: *H. Pudor.*

GERMANY—*Contd.*

Jahrbücher für Nationalökonomie und Statistik. 1902—*Contd.*

July—Die schottischen Banken: *K. Mamroth.* Die Gesellschaften mit beschränkter Haftung: *R. Wendt.* Eisenbahnverwaltung und Finanzpolitik in Preussen: *M. v. Heckel.*

August—Wilhelm Neurath: *v. Schullern.* Der Kapitalismus: *W. Neurath.* Der Fabrikbegriff und die Handwerksorganisation: *H. Riekes.* Die Wohnungs- und Gesundheitsverhältnisse der Heimarbeiter in der Kleider- und Wäschekonfektion einiger österreichischer Bezirke: *E. C.* Die Entwickelung und der derzeitige Stand der Hypothekarstatistik in den einzelnen Staaten, unter besonderer Hervorhebung der neuesten braunschweigischen Hypothekarstatistik und der Bestrebungen für eine internationale Hypothekarstatistik: *F. W. R. Zimmermann.*

Vierteljahrshefte zur Statistik des Deutschen Reichs. Heft 2, 1902. Die Erzeugnisse der Bergwerke, Salinen und Hütten, 1901. Zur Statistik der Preise. Zollfreie Schiffsbaumaterialien, 1899-1901. Die Seeschiffahrts-statistik einiger fremder Staaten-Verkehr im Kaiser Wilhelm-Kanal, 1901. Seeverkehr in den deutschen Hafenplätzen, 1900. Seereisen deutscher Schiffe, 1900. Ergebnisse der Obstbaum-Zählung, 1900. Haupt-Uebersicht über die Ergebnisse der Viehzählung, 1900. Die Finanzen der deutschen Bundesstaaten.

Zeitschrift für Socialwissenschaft. 1902—

Heft 6—Der heutige Stand der Technik und die Aufgaben der Staatsverwaltungen: *W. Exner* (*continued in next number*). Die neuen Einkommensteuern in Preussen und Oesterreich, nach Veranlagung, Statistik und Ergebnissen: *K. Nitschke.* Die gelbe Gefahr als Moralproblem: *M. v. Brandt.* Die Fruchtbarkeit in der Tierwelt: *H. Smidt* (*concluded in next number*).

Heft 7—Beiträge zur Beurteilung einer wirtschaftlichen Föderation v. Mitteleuropa: *Frhr. v. Walters-Sartorius* (*continued in next number*). Preussische Domänenpolitik: *J. Wolf.*

Hefte 8 *und* 9—Korporative Mietsverträge: *L. Fuld.* Die Wandlungen der Heiratshäufigkeit und des mittleren Heiratsalters: *F. Prinzing.* Die rückfälligen Verbrecher in Deutschland: *P. Frauenstädt.* Der Grundbesitz in Russland: *N. Karyschew.*

ITALY—

La Riforma Sociale, 1902—

May—La funzione sociale della Ragioneria: *C. Ghidiglia.* Il riparto dei Deputati in Italia secondo il censimento del 1901: *G. Arangio-Ruiz.* Il pericolo americano: *F. Flora.* Sulla determinazione quantitativa delle variazioni dei fenomeni economici: *C. Ottolenghi.*

June—Il materialismo storico e lo Stato: *C. F. Ferraris* (*continued in next number*). Il diritto dell' industria: *T. C. Giannini.* Il dazio sul grano e la crisi del vino: *E. Giretti.* Le basi economiche della costituzione sociale: *C. Supino.*

ITALY—*Contd.*

La Riforma Sociale, 1902—*Contd.*

July—La Repubblica Argentina e suoi maggiori problemi di economia e di finanza: *A. Loria.* Le istituzioni filantropiche italiane all' estero: *G. Prato.* Il monopolio degli spiriti nella Svizzera: *C. Bachi.*

Giornale degli Economisti, 1902—

June—Le insufficienze dei progetti per l'acquedotto Pugliese:** La gestione finanziaria delle imprese municipali: *Y.* L'abolizione dei dazi nei Comuni aperti: *L. Nina.* Scioperi in Italia nel 1898 e 1899 e all' estero nel 1898, 1899, 1900: *A. Bertolini.*

July—Le importazioni temporanee dei grani esteri in Italia: *L. Clerici.* Gli agricoltori italiani nell' Argentina: *P. Ghinassi.* La legislazione sociale e la democrazia: *M. Pantaleoni.*

August—La tassazione locale in Inghilterra: *L. L. Price.* La municipalizzazione dell' acqua potabile e dei tramways: *G. V.* Liberismo e legislazione di classe: *F. Coletti.* La questione zuccherifera in Francia: *G. François.*

Rivista Italiana di Sociologia. March—June, 1902—Le istituzioni politiche degl' Irani: *I. Pizzi.* La giustizia e il diritto nei loro caratteri differenziali: *V. Miceli.* L'evoluzione dell' ospitalità: *G. Del Vecchio.*

INTERNATIONAL—

Bulletin de l'Institut International de Statistique. Tome xii—

Liv. 1—La Noblesse de Suède, étude démographique: *P. E. Fahlbeck.* La réorganisation de la statistique dans les Pays-Bas: *C. A. Verrijn Stuart.* Statistique de l'évolution de la Bibliothèque Nationale de Paris depuis 1847: *V. de Swarte.* La statistique internationale des valeurs mobilières: *A. Neymarck.* Sur une nomenclature uniforme des causes de décès: *J. Bertillon.* Projet d'explorations démographiques à exécuter dans des pays peu connus: *A. N. Kiaer.* Beitrag zu einer einheitlichen Aufarbeitung der Geburtstatistik: *J. v. Körösy.* Comparability of Trade Statistics of various Countries: *A. E. Bateman.* Memorandum on the methods employed in collection of the annual Agricultural Statistics of Great Britain: *P. G. Craigie.* International comparisons of Cattle and Sheep on the Surface areas, and with reference to the Population of certain countries thirty years ago and at the present time: *P. G. Craigie.* Wheat and maize production in the United States: a statistical contrast: *J. Hyde.* On the progress of Statistics in Japan: *Y. Yanagisawa.* Essai Historique et Statistique sur le Trésor Royal en France au commencement du xviii^{ème} siècle: *V. de Swarte.* Rapport sur la méthode du bulletin individuel appliqué à la statistique judiciaire pénale en Italie depuis l'année 1890: *L. Bodio.*

INTERNATIONAL—*Contd.*

Bulletin de l'Institut International de Statistique. Tome xii—Contd.

Liv. 2—Statistique de la superficie et de la population des contrées de la Terre. 1ère Partie. Europe: *E. Levasseur et L. Bodio.* Familles italiennes qui parlent habituellement des idiomes étrangers recensées dans le Royaume le 10 février, 1901: *H. Raseri.* Les enfants assistés—Notes de législation et statistique comparées.

VI.—*Quarterly List of Additions to the Library.*

Additions to the Library during the Quarter ended 15*th September*, 1902, *arranged alphabetically under the following heads:*—(a) *Foreign Countries;* (b) *India and Colonial Possessions;* (c) *United Kingdom and its Divisions;* (d) *Authors, &c.;* (e) *Societies, &c.* (*British*); (f) *Periodicals, &c.* (*British*).

The Society has received, during the past quarter, the current numbers—either quarterly, monthly, or weekly—of the periodical official publications dealing with the following subjects:—

Consular Reports—From United States and United Kingdom.

Labour Reports, &c.—From Austria-Hungary, Belgium, France, United States, New York State, New Zealand, and United Kingdom.

Trade Returns—From Argentina, Austria-Hungary, Belgium, Bulgaria, China, Egypt, France, Germany, Greece, Italy, Mexico, Netherlands, Russia, Spain, Sweden, Switzerland, United States, India, Canada, and United Kingdom.

Vital Statistics—From Argentina, Egypt, Germany, Italy, Netherlands, Roumania, Switzerland, United States (Connecticut and Michigan only), Queensland, South Australia, and United Kingdom.

Vital Statistics of following Towns—Buenos Ayres, Brünn, Prague, Brussels, Copenhagen, Berlin, Bucharest, Madrid, London, Manchester, Dublin, Edinburgh, and Aberdeen.

The Society has received during the past quarter the current numbers of the following unofficial Periodicals and Publications of Societies, &c., arranged under the Countries in which they are issued:—

Denmark—Nationalökonomisk Tidsskrift.

France—Annales des Sciences Politiques. Économiste Français. Journal des Économistes. Monde Économique. Polybiblion, Parties Littéraire et Technique. Réforme Sociale. Le Rentier. Revue d'Économie Politique. Revue de Statistique. Journal de la Société de Statistique de Paris.

Germany—Allgemeines Statistisches Archiv. Archiv für Soziale Gesetzgebung und Statistik. Deutsche Oekonomist. Jahrbuch für Gesetzgebung, Verwaltung, und Volkswirtschaft. Jahrbücher für Nationalökonomie und Statistik. Zeitschrift für die gesamte Staatswissenschaft. Zeitschrift für Socialwissenschaft. Mittheilungen aus der Handelskammer Frankfurt a. M.

Italy—L'Economista. Giornale degli Economisti. Rivista Italiana di Sociologia. Riforma Sociale.

Sweden—Ekonomisk Tidskrift.

Switzerland—Journal de Statistique suisse.

United States—Banker's Magazine. Bradstreet's. Commercial and Financial Chronicle, with supplements. Engineering and Mining Journal. Journal of Political Economy. Political Science Quarterly. Quarterly Journal of Economics. Yale Review. American Academy of Political and Social Science, Annals. American Economic Association, Economic Studies and Publications. American Geographical Society, Bulletin. American Statistical Association, Quarterly Publications. American Philosophical Society, Proceedings and Transactions. Columbia University, Studies in History, &c.

India—Indian Engineering. Asiatic Society of Bengal, Journal and Proceedings.

Canada—The Chronicle: Insurance and Finance.

New Zealand—Government Insurance Recorder. Trade Review and Price Current.

United Kingdom—The Accountant. Accountants' Magazine. Appointments Gazette. Athenæum. Australian Trading World. Bankers' Magazine. Bimetallist. British Refrigeration. British Trade Journal. Broomhall's Corn Trade News. Browne's Export List. Citizen. Colliery Guardian. Commercial World. Economic Journal. Economic Review. Economist. Fireman. Incorporated Accountants' Journal. Insurance Record. Investors' Monthly Manual. Investors' Review. Iron and Coal Trades' Review. Labour Co-partnership. Licensing World. Machinery Market. Nature. Navy League, Journal. Policy-Holder. Post Magazine. Public Health. Publishers' Circular. Sanitary Record. Shipping World. Statist. The Times. Tuberculosis. West Africa. Anthropological Institute, Journal. Cobden Club, Leaflets. East India Association, Journal. Howard Association, Leaflets, &c. Imperial Institute, Journal. Institute of Actuaries, Journal. Institute of Bankers, Journal. Institution of Civil Engineers, Minutes of Proceedings. Iron and Steel Institute, Journal. Lloyd's Register of British and Foreign Shipping, Statistical Tables. London Chamber of Commerce, Journal. London University Gazette. Manchester Literary and Philosophical Society, Memoirs and Proceedings. Royal Agricultural Society, Journal. Royal Asiatic Society, Journal. Royal Colonial Institute, Proceedings and Journal. Royal Geographical Society. Geographical Journal. Royal Irish Academy, Proceedings and Transactions. Royal Meteorological Society, Meteorological Record and Quarterly Journal. Royal Society, Proceedings. Royal United Service Institution, Journal. Sanitary Institute, Journal. Society of Arts, Journal. Statistical and Social Inquiry Society of Ireland, Journal. Surveyors' Institution, Professional Notes and Transactions. Trade Circulars.

Donations.	By whom Presented (when not purchased).
(a) Foreign Countries.	
Argentine Republic—	
Boletin demografico argentino. (Current numbers)	The Ministry of the Interior
Buenos Aires (*Province*). Direccion General de Estadistica. Boletin mensual. (Current numbers)	The Statistical Bureau
Austria-Hungary—	
Ackerbau-Ministeriums. Statistisches Jahrbuch des k.k. (Current numbers)	The Ministry of Agriculture

Donations—Contd.

Donations.	By whom Presented (when not purchased).
(a) Foreign Countries—*Contd.*	
Austria-Hungary—*Contd.*	
Arbeitsstatistisches Amt.—	
Arbeitszeit-Verlängerungen (Überstunden) im Jahre 1901, in Fabriksmässigen Betrieben. 32 pp., 8vo.	The Austrian Labour Department
Protokoll der 11^{en} Sitzung des Arbeitsbeirathes. 1902. 8vo.	
Wohlfahrts-Einrichtungen . . . in Oesterreich. Theil 1, Wohlfahrts-Einrichtungen der Eisenbahnen. Heft. 1. Privat-Eisenbahnen. 8vo. 1902	
Finanz-Ministeriums. Mittheilungen des k.k. Jahrgang 8. Heft 2. 8vo. 1902	The I. & R. Ministry of Finance
Eisenbahnministerium. k.k. Bericht über die Ergebnisse der k.k. Staatseisenbahn-Verwaltung für 1901. Maps, &c., 4to.	The I. & R. Ministry of Railways
Statistik der im Betriebe gestandenen elektrischen Eisenbahnen, Drahtseilbahnen und Tramways mit Pferdebetrieb für 1900. 1 vol., 8vo.	
Handel. Berichte über die Handelsbewegung sowie Bewertung der im Jahre 1901, ein- und ausgeführten Waren des österr-ungarn. Zollgebiets. 8vo.	The Ministry of Commerce
Handels. Statistik des auswärtigen, des österr-ungarn. Zollgebiets. Jahr 1901. 4 vols., 8vo.	
Österreichisches Wirtschaftspolitisches Archiv. (vormals "Austria"). (Current numbers.) 8vo.	
Consumvereine. Statistik der Registrierten, für 1898. Fol.	The I. & R. Central Statistical Commission
Grundbesitzstatistik. Ergebnisse der, nach dem Stande vom 31 Dec., 1896. Heft 1. Nieder-Oesterreich. Fol.	
Rechtspflege. Ergebnisse der Strafrechtspflege im Jahre 1897. Fol.	
Sparcassen. Statistik der, für 1899. Fol.	
Viehzählung, 31 Dec., 1900. Abth. 1. Summarische Ergebnisse. Fol.	
Statistische Monatschrift. (Current numbers)	
Statistische Nachrichten aus dem Gesammtgebiete der Landwirtschaft. (Current numbers)	
Hungary. Dénombrement de la Population des Pays de la Couronne hongroise en 1900. 1^{ere} Partie. Démographie générale suivant Communes. La. 8vo.	The Central Statistical Bureau
Bosnia and Hercegovina. Hauptergebnisse des auswärtigen Waarenverkehres im Jahre 1901. La. 8vo.	The Statistical Bureau
Bukowina. Mittheilungen des Statistischen Landesamtes des Herzogthums Bukowina. Hefte 8 und 9. La. 8vo. 1901-02	"
Belgium—	
Annuaire de la législation du Travail. 5^{e} année, 1901. 8vo. 1902	The Belgian Labour Department
Bulletin du Service de Santé et de l'Hygiène publique. (Current numbers)	The Belgian Legation
Commerce avec les Pays Étrangers. Tableau général du, pendant 1901. Diagrams, &c., la. fol.	The Board of Trade
Mines. Annales des. Tome vii. Livr. 3. Année 1902	The Belgian Labour Department

Donations—Contd.

Donations.	By whom Presented (when not purchased).
(a) Foreign Countries—*Contd.*	
Belgium—*Contd.*	
Recensement général des Industries et des Métiers. (31 Oct., 1896.) *Denombrement A.* Vol. 6. Repartition des entreprises et des ouvriers d'après la date de fondation et d'après le nombre de mois d'activité par année. Vol. 7 . . . Sexe, âge, et moment du travail. Vol. 8 . . . Durée du travail. Vols. 9–14 . . . Salaires dans les differentes Industries. Vol. 15. Repartition des ouvriers d'après le mode de calcul des salaires. Emploi de moteurs. *Dénombrement B.* Vols. 16 et 17. Repartition des ouvriers travaillant au siège des entreprises d'après le sexe, l'âge et l'état civil, et autres renseignements sur les ouvriers et les familles ouvrières. Vol. 18. Exposé général des methodes et des resultats. Répertoire alphabétique des exploitations industrielles et des metiers. Diagrams, 4to. 1901-02	The Belgian Labour Department
Industrial Census, 1896. A duplicate set	The Board of Trade
Académie Royale de Belgique. Bulletin de la classe des lettres. . . 1902. Nos. 4–7. 8vo.	The Academy
Brazil—	
Importação e Exportação . . . de Janeiro a Novembro de 1901. Fol.	The Statistical Bureau
Bulgaria—	
Agricole, statistique, pendant 1897. Diagrams, 4to. Commérce de la Principauté avec les pays étrangers . . . pendant 1901. Statistique du. Diagrams, 4to. Écoles secondaires, speciales, &c. . . pendant 1899-1900. Statistique des, 4to. Recrutement militaire régulier pendant 1899. Statistique du. Diagrams, 4to.	"
China—	
Customs Gazette. No. 133. Jan.—March, 1902. 4to.	Sir Robert Hart, Bart., G.C.M.G.
Denmark—	
Communications Statistiques. 4^e Série, tome xi. (Contents.) (1) Importation et exportation, 1901. Consommation de familles d'ouvriers danois. Prix des céréales produites en 1901. Récoltes en 1901. Productions controlées en 1901 (alcool, &c.). 8vo. 1902	The State Statistical Bureau
De Danske Kreditforeninger. Festskrift i anledning af Halvhundredaarsdagen for lov af 20 Juni, 1850, om oprettelse af Kreditforeninger. 234 pp. 4to. Kobenhavn. 1901	Mr. H. W. Wolff
Egypt—	
Dette publique. Compte rendu des Travaux de la Commission pendant 1901. 8vo. Finances. Compte général de l'administration des Finances pour l'Exercice 1901. Fol.	The Ministry of Finance
Postes Égyptiennes. Administration des. Rapport sur l'Exercice postal 1901. 8vo.	The Post Office

Donations.	By whom Presented (when not purchased).
(a) **Foreign Countries**—*Contd.*	
Egypt—*Contd.*	
Reports on the Finances, Administration and Condition of Egypt and the Soudan in 1900. [Cd–441.] 1901 Suez Canal. Returns of Shipping and Tonnage, 1898-1901. [Cd–594] and [Cd–1075.] 1901-02	Purchased
Comité de Conservation des Monuments de l'Art Arabe. Exercice 1901. Procès-Verbaux des Séances, &c. Fasc. 18. Plates, 8vo. 1901	The Committee
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Vol. LXV.] [Part IV

JOURNAL
OF THE ROYAL STATISTICAL SOCIETY.

DECEMBER, 1902.

The INAUGURAL ADDRESS *of* MAJOR PATRICK GEORGE CRAIGIE, C.B., PRESIDENT *of the* ROYAL STATISTICAL SOCIETY, SESSION 1902-03. DELIVERED 18*th November*, 1902.

THE Presidency of the Royal Statistical Society is an office alike of dignity and responsibility. On entering therefore on the duties of this Chair, a twofold obligation impresses itself upon me as the humble successor of the very distinguished line of Presidents who have swayed the destinies of the Society for nearly threescore years and ten. I have, in the first place, to express my profound sense of the honour done me by my colleagues, and next I have to ask their special forbearance in the discharge of such functions as may fall to my lot, a forbearance which I think I am entitled to claim, when the case is one of virtual promotion from the ranks. It would not be easy for anyone to follow such a President as our last. Lord Avebury's devotion to the Society has long been proved and recognised, and his multiple qualifications in the world of business, the world of science, and the world of literature place any successor at no little disadvantage. Difficult too is it for one who was yesterday your servant—proud though he has felt of the trust you so long reposed in him in a secretarial capacity—to be called to handle reins of authority which have been again and again preferably entrusted to some of the most distinguished statesmen of the Empire. Most difficult of all, perhaps, is it for one who is moreover still a servant of the Crown, in the strictest sense of the word, and who has certain restrictions incident to that honourable position always before his eyes, to feel sure that he can be equally at home in the current business of the Chair, or equally free in the choice of a topic for address, as if he were, like most of our past Presidents, one to whom the field of politics was open on every side, or who could claim the indulgence due to an official who has served his time and earned his freedom.

In a former case in which one of your Honorary Secretaries was honoured with a call to the Chair, he claimed it, as the result of his experience in the minor office, that the delivery of an Address was not the sole, or even the major part, of what a President may be expected to do for the Society. I desire to associate myself with that opinion, and in bargaining to do my best during my year of office to help forward your general interests, I will ask for some indulgence if the remarks I propose to offer on this occasion partake more of the nature of suggestions of the lines which statistical inquiry and research may usefully take, than of any full and reasoned exposition of particular theories and conclusions, for the deliberate preparation of which the opportunities left to me by my multifarious duties at the Board of Agriculture are not extensive.

In choosing a subject I have endeavoured to remember that an opening Address is not necessarily a paper; and although, to our great advantage, we have nevertheless from time to time secured on these occasions illuminating lectures on particular subjects of current political interest, yet the general practice of my predecessors—and particularly those of them who were most conversant with the business of the Society—has inclined more to the employment of the opportunity for either reminiscent comments on the past, or hortatory encouragements to future statistical effort.

Looking back, as I am naturally led to do from this Chair, to the changes in our Society's *personnel*, I cannot begin the business of a new Session without notice of the losses of the past, and, most recent of these, to the death, scarce a month ago, of our colleague Sir Juland Danvers, whose services to the Society, on the Council and otherwise, and to the Indian Empire in his honourable official career, will be long remembered. Among other gaps in the ranks of our personal friends and colleagues, I would desire also here to deplore the sad and premature loss of our distinguished Honorary Fellow, Professor Mayo-Smith. Of the early Presidents of this Society we have now no survival amongst us; the senior Hon. Vice-President on our list dates only from 1877. Of the original promoters of the Society in 1834 no survivor at all remains, and to the younger generation of statisticians the names of Henry Hallam, our first Treasurer, of Charles Babbage, Lord Overstone, Lord Harrowby, Colonel Sykes, Thomas Tooke, the Rev. T. R. Malthus, G. R. Porter, and others, who made up the first Council, are familiar only by their works. Even of the second group of statistical leaders with whom many of us well remember to have worked, and from whom as juniors we had such kind encouragement, Mr. Newmarch, Mr. Dudley Baxter, Professor Leone Levi, Dr. Guy, Dr. Farr, Dr. Mouat, and Sir Rawson Rawson, have all passed away, leaving a record which the Society will not fail to cherish, and an example which commends itself to all.

It is not my object now to trace the history of our own Society since its birth on the 15th March, 1834, on the suggestion of the famous mathematician, astronomer, and statistician, Quetelet. Nor do I offer any advertisement to the world, in a time when advertisement is very much the order of the day, of the utility of its services to the country, the advantages which its *Journal* and its Library offer to the searcher after general truth, the renown it has achieved by the solidity of the labours and qualifications of its founders, beyond recalling to public notice a verdict passed upon us not by one of our own nation, but by a potent figure in the European hierarchy of statistics, the present President of the International Statistical Institute—Dr. von Inama Sternegg —who told our Jubilee meeting in 1885 that the unceasing labours of the first fifty years of our corporate existence, then celebrated, had earned for the Statistical Society of London "the undisputed "right to the title of the first and most important society in "the world for promoting the growth of statistical knowledge "and stimulating the development of statistical operations and "research."

I should esteem it, however, the most welcome incident of my own tenure of this Chair, could I see, before I give place to another President, an important new departure effected by a promise of that better and more worthy housing for its work and its unique library, which a Society like ours deserves to give full scope to its accumulated teachings. The value of the services which an organisation like our own can render to the State has been repeatedly acknowledged. We can appeal to men of every class and race for support in our efforts to promote close reasoning and accurate thinking respecting the great factors of political life, and to examine with the arithmetical searchlight of figures the projects and the aspirations of social reformers.

Our Society has now a record stretching into three successive reigns, and embracing the whole lifetime of what will hereafter be known as the Victorian epoch of our national history. National recognition has been accorded to us in various forms. We enjoyed the patronage of the Prince Consort as early as 1840. Our official jubilee was followed by a Royal Charter of Incorporation, and we have had recent evidence of Royal favour in the acceptance by the Sovereign of these Realms of the post of Patron, and the enrolment of the Heir Apparent to the Throne as Honorary President. Tendering as we have just done our loyal congratulations to King Edward, on the auspicious occasion of his Coronation, we are inevitably reminded to look backward to the historic meaning of that ceremony, linked with century after century of English national life, and forward to new obligations imposed on us by the possession of extended power and imperial dominion which the last half century has brought to the Monarch of all the Britains.

As the first of your members to accept the baton of President in a new century—for to Lord Avebury belonged the distinction of bridging two centuries in his two years of presidential life—I may be pardoned taking for the theme of my remarks to-day a search, more or less discursive, into the nature of the statistical evidence, to which we have access, of the nation's position—relative and absolute—at the present day, contrasted with the position it occupied when this Society was founded.

The early discussions of the Society reflected the stirring topics, political and economic, which filled men's minds in the third decade of last century, prominent among which were parliamentary reform, municipal reform, poor law reform, registration reform, educational extension, and that industrial revolution which we owe to the developed use of steam for transport by land and sea. To the legislation of 1832, 1834, and 1835 the historian will always look back to find a starting point for many of the changed conditions which differentiate the Britain of the last two-thirds of the nineteenth century from the period which lay before.

The manifold development in every sphere of national life, the extending scope and dimensions of governmental action within the State itself, the growth of the country's trade, its colonial possessions, and its international position is notable since 1834.

I propose then, with your permission, to invite renewed attention to some of the several directions of inquiry to which we statistical inquirers may with advantage address ourselves in the hope of unveiling the true nature, sometimes obscured, of the changes which make the British people of 1902 a different community in its internal composition, in its external relations, and in its political activities, from its immediate predecessors of seventy years ago. The process I suggest is the simple one of measurement and comparison, and it is hardly needful to-day to assert that in measurement and in comparison lie the essence of all statistical research.

It is not needful, and it would be tedious, to recount the precise definitions which one or another of our more philosophically minded fellow workers have attached to the term "statistics"—whether the word had a German or a Grecian origin, whether the scope of statistical research is to be limited to the skilful collection and methodical presentation of numerical facts, thereafter to be handled by the economist and politician, or whether the orderly and scientific building up of a sound superstructure on the basis of the tested and grouped material of comparable facts may claim to be included in the task which is open to us. The history of our Society has been a record of development in this matter. I have the right good statistical authority of the late Dr. Engel, in declining the task of strict definition of this our science, art, or mystery, if I recall the statement which he made to the International Statistical Congress at the Hague, three-and-thirty years ago, that he had himself discovered in the writings of different authors 180 different definitions. Unless I am mistaken, the energy of some of our recent and younger writers has even since that time multiplied the suggested interpretations of our subject.

On one point I think, however, we must all, or nearly all agree—statistical work of value, in whatever direction we may extend it, includes and presupposes measurement and comparison. Measurement and comparison are, I take it as admitted, indeed, on the scientific authority of Lord Kelvin, to be essential conditions of any form of significant discoveries in the domain of science, and I think I am safe too in claiming that the accepted laws and theories of the political economist have virtue and reliability for the guidance of the statesman just so far and no farther than they can be shown to be founded on the recorded experience of the past and on the measured facts and factors of life as they stand revealed to the statistical investigator.

But the facts have first to be accumulated, then to be marshalled and numerically grouped, and then, and then only, to be built upon. Nor can any statistician rate too highly the obligation that lies upon him to see that the elementary units accumulated are individually sound and durable material, that their strength has been tested, their capacity measured rightly, and their comparative significance accurately determined, before he either ventures himself to announce the solution of the problem sought, or hands over for the use of the urgent and bustled politician, or of the speculative economist, the conclusions to which the data seem to point.

So much only by way of advice to my younger colleagues—advice which I know is concurred in by those of us who have found not a few occasions, in the current discussions of the last quarter of a century, for enforcing these cautions. The advice is none the less necessary because statistical forms, tabular or graphic, have been in far more frequent and, perhaps, less guarded, popular use than in the days when our own Society began its solid and persevering labours. The statistician of the twentieth century—quite as much as the modern man either of science or of politics—stands to-day in more danger of subordinating safety to speed in announcing his conclusions, than in times when the pace of current politics and journalistic enterprise was less forced.

Now the foremost topic to which the rule and plummet of the statistician is to be applied is that of the numbers and distribution of the population. This is after all the governing figure which dominates any statistical inquiry into the "conditions and prospects of society." The economic relations of the individual to the group or society of which for one purpose or another he forms part, cannot be discussed without measuring the dimensions of that group—be it a family, a district, a State, or a collection of States.

Again and again my predecessors in office have enforced the lessons, political and economic, of recent changes in the relative numbers of the persons with whom, either as fellow citizens in our own country, or as rivals in war or as competitors in trade abroad, we have to deal.

The moment of completing our own census, coinciding as it practically does with the independent enumerations of other civilised States, will furnish to those of our fellows, whose expert knowledge and whose intimate connections, present or past, with demographic statistics, equip them for the task, a rich field of exploration and research. I do not attempt to anticipate the detailed papers, for which we have still reason to look, from several of our colleagues at no distant dates. Mr. Baines and Mr. Welton, who have prescriptive rights to enlighten us yet again on different aspects of this subject, have already whetted our appetites by the notes they have supplied on the data available since the preliminary figures appeared, and the complete story of the English census, which is now coming out from Somerset House in geographical instalments, wherein we recognise the skilful hand of our good colleague, Mr. Noel Humphreys, will give a new starting point of invaluable importance to the statistician.

But, beyond these national countings on our own shores, and beyond the Colonial and Indian figures, the publication by the International Statistical Institute of the first, or European instalment of the World's aggregate population record—which that body at its Norwegian meeting of 1899 entrusted to its distinguished Vice-President, Levasseur, and its veteran General Secretary, Bodio—reminds us of the very general numbering of the peoples of the world which heralded the approach, or marked the opening of the twentieth century.

Read with the similar efforts in the past, this latest publication tempts me to ask you to consider what are the new facts to be learned as to the relative position of this our own country to its European and more distant neighbours at the present time, and how that position compares with the conditions which held good when our own Society had begun its scientific labours, after the nineteenth century had surmounted the troubles and turmoil of its opening years.

When our Society was born, the English census of 1831 had just been taken, and showed the inhabitants of the predominant partner of the United Kingdom to be represented by the figure of 14,000,000 souls. The first census of the twentieth century makes the English total 32,500,000. This is a growth of 132 per cent. in the seventy years 1831-1901 in this section of the United Kingdom alone. But England—even England and Wales—is not the whole of Britain. The predominant partner of the United Kingdom was much less predominant in the days to which we are looking back. It mustered then 58 per cent. of the nation's inhabitants. It claims to-day more than 78 per cent. The other partners have moved in opposite directions. The addition which Scotland shows to her resident total in this interval is largely outweighed numerically by the diminution which Ireland has to report, and if the United Kingdom total of 1831 be contrasted with that of 1901, it is a nation collectively numbering 24,400,000 at the earlier period which we have to contrast with 41,500,000 now. This is a growth of 70 per cent. in seventy years.

What then were the dimensions of the neighbouring peoples upon whom those 24 millions of Britons looked out seventy years ago across the English Channel or the North Sea, and what are the changes we have to note in the magnitude of the more distant trans-oceanic possessions of the English Crown and the non-European States of the globe with whom our fathers had to deal in the third decade of the last century?

The last volume of the International Statistical Institute makes the population of continental Europe about 1830 to have been some 192 millions to our 24, or exactly in the ratio of 8 to 1. But Europe, although a very potent and interesting corner of the globe, is not the world. On rather more than one-thirteenth part of the total land surface it contains about a quarter of the world's inhabitants. Making use therefore of such extra European enumerations as have been made, and supplementing these by the current rough estimates, which unfortunately must still pass for statistics in regions where the census taker has not accomplished the task of enumeration, the world's population seventy years ago was apparently about 847 millions.[1]

For the guesses of demographic experts we are anxious to substitute the results of that projected inquiry into unenumerated peoples on which the International Institute has been urged to enter by our colleague, Mr. Kiær, and for which the Statistical Bureau of Denmark is understood to be willing to formulate the preliminary arrangements. But pending the achievement of this ambitious enterprise, we may, with the latest estimates, not err very widely if we put the aggregate population of the Twentieth Century World at not less than 1,600 millions of inhabitants, white, black, red, or yellow, as the case may be.

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[1] See "International Statistical Institute" (Levasseur), tome ii, 1887, p. 238, and "Almanach de Gotha."

Half of the whole aggregate of the peoples of the earth are still unenumerated, according to the estimate which our able colleague Mr. Baines put before us at Budapest—States as vast as China and as small as Montenegro being in the list of non-census taking governments—while the available data for the protectorates and dependencies of our own and other European administrations are equally defective.

Admitting the consequent weakness in the statistical basis of the comparison, the figure just quoted as the world's total may nevertheless help for the moment to exhibit roughly the commonly received impression of the present magnitude of the human race in the five conventional geographical divisions of the world's surface. A great intermingling of interests has however arisen both as regards territory and as regards men. The European nations have not only by emigration in the past largely recruited the resident populations of other regions, but they have likewise assumed dominion and incurred responsibilities which have tended largely to increase in recent times, and which make the points of possible friction in the political questions of the day world-wide. Foremost among all European States is the action of our own country in this direction, and no measurings of relative international position, now and seventy years ago, can be valid which omit to take such account as we may of this material factor.

On the faith therefore, as regards the earlier period, of an estimate, made with care and with official help and encouragement, by Mr. Montgomery Martin,[2] of our own over-sea possessions and colonies in the third decade of last century, I have ventured to place alongside the *guesses* of the world's totals of population the probable share of the British commitments of seventy years ago roundly in millions of persons.

Contrasting these estimates with the assumed totals of the British commitments of to-day, as we have them in our official and semi-official publications, and relying for the African data on the well considered estimates furnished by the "Stateman's "Year Book," which Dr. Scott Keltie so ably conducts, it would seem that the British total now includes very nearly a fourth part of the estimated population of the globe, as against one-seventh part at the earlier date. The British subjects of European extraction were believed to form a fifth of the empire's total population in 1830: they can hardly form much over a seventh now. The greater uncertainty and very probable defects of the earlier estimates in numerous cases may no doubt contribute to the apparently rapid advance of the subject peoples, but, with whatever qualifications we introduce, the figures leave no doubt of the vastly augmented magnitude of the empire's responsibilities and the empire's subjects.

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[2] "Statistics of Colonies of British Empire, 1839."

Very roughly the populations I have just contrasted divide somewhat as under:—

	About 1830.		About 1900.	
	Millions.	Of which British.	Millions.	Of which British.
Europe	216	24·7	400	42·0
Asia	480	97·4	868	300·0
Africa	109	0·3	178	41·9
America	40	2·3	148	7·5
Oceania, &c.	2	0·3	6	5·0
	847	125·0	1,600	396·4

Were an equally rough comparison to be ventured upon as regards the areas of the world's surface then and now under British rule or British protection, the older estimates, defective no doubt as regards unoccupied regions, do not exceed 2¼ million square miles, while the later surfaces reach 12½ square miles. This advance is relatively much greater than that of the estimated populations on the areas concerned. If the estimate be accepted, it means the exchange of a responsibility, reaching seventy years ago to some 4 per cent. of the land of the world, for one which embraces well nigh 24 per cent. of that area—and this without including the existing British commitments on the Nile, for the good government and control of no insignificant population and no unimportant area in Egypt and the Soudan.

Whether it be an advantage or not to the conduct of diplomacy—and the question may be left to be answered by some of our Foreign Office friends, whose co-operation I fear we do not often secure in the Royal Statistical Society—the world, as it grows older, it would seem inclines to concentrate power on a smaller number of political centres. Six States, and six only, appear at the present day to govern or protect some three-fourths of the world's population, and when ten States have been named, something like six-sevenths of the peoples of the globe have been grouped and classified.

Two great empires now alone, we are told, account for something like half the population of the world—Great Britain and China—adding a comparatively known to a comparatively unknown statistical factor, hypothically absorbing between them a multitude as great as all the world held a century ago, and one which presses close upon, if it does not exceed, 800 million souls. The direct subjects and protected races falling under the widely-stretched sway of King Edward in distant corners of the earth, are believed to somewhat slightly exceed the compacter masses which crowd the series of contiguous territories owning more or less allegiance to the Imperial Court of Pekin. A long way after, and about one-third as great in men as either of these world powers, comes the Empire of the Czar, with its 9 million square miles in a ring fence. If we may credit the figures of the latest African and Asiatic extensions of the influence spheres of our great neighbour France, it is, perhaps, the populations for which Paris speaks that stand next only to the Russian quota, and, like it, exceed 100 millions, of whom but two-fifths are native Frenchmen. Only after this can we rank the youthful, very differently constituted, and yet mighty nation of the United States of America, even if her new Philippine subjects are added. The German, the Japanese, and the Austro-Hungarian empires follow next in their "all world" rank, leaving Holland with an over-sea population seven times as great as the Dutchmen at home, and—a good way behind—Italy, as the tenth in magnitude of persons to complete the account for six-sevenths of the peoples of the globe, civilised or barbarian, numbered or guessed at.

No mere re-count or grouping of more or less probable conjectures of the so-called world's population would suffice to bring out, as a geographical examination of the centres of development will do, the essential differences between the relative strength of the peoples of 1834 and those of 1900. Europe, as it appears in the estimates of the various authorities, may have a little less than doubled its population, but, according to these figures, if credence is to be given to them, even the much greater population of Asia has increased in nearly equal ratio—a result which, I confess, rather suggests to me the insufficiency of the earlier guesses, than the exact numerical progress indicated in the table. Meanwhile, of course, the new world's development, and the share of it which is due to the European overflow, is common knowledge.

The latest contrast of the International Statistical Institute places opposite to the 400 millions accounted for at the present time as the population of the conventional Europe, a figure of some 216 millions in 1830. Roughly, this would mean a growth of 85 per cent. in seventy years. But it occurs to me that the factors in this aggregate should be dissected. There are two, at least, which need further examination and inquiry.

The Russian increment alone is close upon 70 millions of the whole. This suggests a hypothetical growth of population equal to more than 150 per cent. in seventy years, or more than 2 per cent. per annum, and leaves to the rest of Europe a general growth at less than half this rate, or only 67 per cent.—less than 1 per cent. per annum.

But the earlier Russian figures I cannot but regard as, at best, of doubtful authority. There has been no real census taken in that great empire until the last in 1897, and those of us who visited that empire on that occasion, and who most admire the vast labour of our energetic colleague M. Troïnitsky, are the readiest to find a need for caution in comparisons with earlier data. The figures on which the Russian estimate of 1830 were based, although not now in use for the first time in international comparisons, are, I imagine, of even less accuracy than the police or fiscal data of 1851 and 1858, with which alone the Russian serial statement itself makes a start, and I hesitate to found upon them a conclusion as to a rate of increase so very much beyond that met with elsewhere in Europe.

Although less disturbing to the total, the increase attributed to the Turkish, Danubian, and Grecian communities of the south-east must rest on figures which at the earlier date in all cases, and even in the last year in others, are not much more than guesses.

On the whole, therefore, I think, without any disparagement to our Eastern European neighbours, we shall get a more trustworthy means of comparing and of realising what has been going on in the last seventy years, if we confine the present inquiry to the regions where there are longer census records to fall back upon, and employ, if only for a single object, a map in which the western half of Europe is treated apart from the territories of the States whose rule reaches eastward far beyond the conventional limits of the Europe of the atlas.

If I were to spread out before you a map of the World—of the Old World in this instance—the impression which it gives is that not of several continents, but of one continuous stretch of land half-way round the globe, whereof the natural centre will be a meridian drawn from the North Pole southwards through the ancient capital of Delhi.

To right and to left of this reaches the land surface of the hemisphere ending, reluctantly as it would seem, in the circumambient ocean on the east, and the south-east, south, south-west, and north-west in one or more lacerated or serrated peninsulas, with, as a rule, their outlying pickets of detached islands in continuation, on one of which we stand.

On the extreme east—the land ends in the East Cape and the small peninsulas of Kamtshatka and Korea, with the Japanese and other islands running out into the farther Pacific. On the south we have the great double projections of Indo-China and of Hindustan. On the south-west the entire continent of Africa is in a sense one great peninsula, while in the far north-west corner the European States, other than Russia, really take the shape of a large deeply sub-divided peninsula, with the British Isles at its farther extremity.

That and no more is the apparent geographical section or group of countries to which I am tempted to restrict the scope of my present survey. This most interesting section of the world to us covers much less than half what we are accustomed to call Europe on the map, although it holds three-fourths of the population. The omission on the ground of the weakness of the earlier demographic data of so much of Russia (2 million square miles out of nearly 9) as comes within the conventional Europe, and the omission of Turkey, with its changeful and shrinking area, and the territories now known as Servia, Bulgaria, Roumania, Greece, Montenegro, Herzegovina, and Bosnia, for the moment from our statistical survey, will eliminate from the computation an unsatisfactory element of relatively weak conjecture.

On somewhat different grounds, when it is a general statistical view that is alone desired, I pass over any movement which may have happened in those microscopic sovereignties which are still studded on the map of Europe, and form insignificant splinters of the European political block, leaving out from the tabulated growth of populations four at least of these minor States, which do not boast collectively, even now, among them all 50,000 persons.

The changes of the fortunes of Monaco, Liechtenstein, Andorra, and even San Marino, do not concern us much, although the latter, proud of its boast to be really quite the oldest State in Europe, only five years ago concluded a solemn treaty of unity and friendship with the adjacent Kingdom of Italy. Again, perhaps, the 230,000 inhabitants of the Grand Duchy of Luxemburg may not require to be individually noticed for such purposes as the present, and if these five omissions be allowed to me, the States of Europe can be readily reduced to a baker's dozen of separate governments.

And if I have incurred the wrath of orthodox map makers in thus setting up a little Europe of my own, I would point out that geographers are not in absolute agreement as to what Europe in the continental sense really is. The careful selector of statistical material, even if he were not courageous enough to restrict himself to the Western countries, runs very soon against another difficulty when he comes to reckon the density of the European peoples; for where is the boundary of Europe to be drawn? What adjacent islands are or are not to be brought within the pale? The British Isles and Sicily no one suggests can be left out of reckoning. Malta, I believe, is now an unquestioned European station. The Colonial Office List includes Cyprus. But the editors of the "Bevolkerung der Erde," Drs. Wagner and Supan, appear to refuse to the islands in the sea of Marmora—as well as to the Canaries, Madeira, and the Azores—a right to a place within the natural boundaries of Europe, while there is a difference of over half a million of square miles in the measurement of the aggregate surface, according as we draw one or another boundary between the conventional Europe and the conventional Asia of the geography books, and according as we do or do not include the Polar Islands, Iceland, Nova Zembla, and Spitzbergen, which, whatever be the paucity of the enumerated population, are themselves credited with an area of more than 100,000 square miles.

The Ural Mountains are crossed by Russian administrative circles which embrace Asiatic populations in the scope even of the fifty Governments of "Russia in Europe." Important Caucasian provinces stride across the range of the Caucasus, and only a sign-post on the road hints where Asia actually begins.

The limited and reduced Europe I have now arrived at is not however, whatever the map may suggest, to be docked still further at the north for sake of symmetry by the exclusion of the special Scandinavian sub-peninsula, which has more than twice the area, with about one-sixth of the people, of the British Isles, but which is in so prominent a sense the home of accurate census taking, that it must enter our seventy years' statistical survey.

In the thirteen States left for comparison, I find a recorded population of 167 millions has become one of 263 millions in the lapse of seventy years. This is a growth of something under 58 per cent.

The comparative rates of increase vary and the consequent relative position of these States has altered somewhat nearly as under, adjusting as far as may be the figures shown to the present area of each State in which territorial changes have occurred. The comparison is made between our own country, our nearest neighbour, France—which has demographic peculiarities that entitle its slow growth to separate and careful diagnosis—the German Empire, which on other grounds commands special attention at this moment, and the somewhat unequal groups which remain—Italy with Switzerland, and Austria-Hungary on the south, the Iberian Peninsula on the south-west, and the minor powers of the north, the three Scandinavian kingdoms, with Holland and Belgium.

Population in Millions.

	About 1830.	About 1900.	Increase per Cent. in Seventy Years.
United Kingdom	24·4	41·6	70·5
France	32·5	38·9	19·7
Germany	30·0	56·4	88·0
Austria-Hungary	30·0	45·4	57·3
Italy and Switzerland	23·2	35·8	54·3
Spain* and Portugal	14·2	23·1	62·7
Sweden, Norway, Denmark, Belgium, and Holland	12·4	21·7	75·0
Total	166·7	262·9	57·7

* The figures accepted as the Spanish population of 1830 are those quoted in the last International Statistical Institute volume as furnished by the Spanish authorities, but a larger total by quite 2 millions has been in use, and may, in view of the census of 1887, be preferred. This would largely reduce the increase shown for the Peninsula.

The United Kingdom growth has been thus 17,200,000 persons, or a matter of 70·5 *per cent.*, in the whole seventy years. France, in the same interval, has added only 6,400,000 to a population which was 33 per cent. greater than our own in 1830—a growth of less than 20 *per cent.*, which leaves her total inferior to the British. But Germany—meaning at the earlier date all that congeries of kingdoms, duchies, and free cities which make up the German Empire of to-day—has, to a population very little inferior to the French of 1830, added 26,400,000, a growth of 88 *per cent.*

For the rest, the smallest group—made up of the Scandinavian and Low Countries, all of which border on the North Sea or the Baltic—displays a growth of population coming between the British and the German ratios of exactly 75 *per cent.*, the other advances falling short of this.

There was thus just one-seventh of the whole 167 millions British in 1830, while our relative position with our immediate neighbours is improved to nearer one-sixth in 1900.

It must be remembered in this connection that while the United Kingdom has added 17 million persons to its resident population in seventy years, in these years also there has left its shores a continual current of emigration to the United States and to our several oversea possessions. To the great American

Republic I gather that[3] there went within a fraction of 8 million persons between 1831 and 1901, and rather more than half that number to British Colonies and elsewhere. Of the latter group, 1,773,000 went to Canada—half of the whole quota going there in the first twenty-five years of the seventy—and very nearly as many, or 1,730,000 persons, to Australasia, the current in this case being more equally distributed, but the smallest decennial quota emigrating in the latest decade.

Put otherwise, in the lifetime of this Society, very nearly 5 persons for every 10 ultimately added to our home stock have gone to build up the closely related State which dominates, so far as population is concerned, the continent of America. About 1 person for every 10 of the nation's increase in our own islands has in the same interval gone to Canada, and another 1 for every 10 to Australasia.

The subject of emigration, both from our own country and from other European nations, deserves, however, once again attentive study by itself on a scale which cannot be attempted in a general address of this type. I commend, however, both the fluctuations of the numbers, and the meaning of the recent changes which have marked its current, to your consideration, as matter bearing very directly on the relations of the older to the newer countries of the world. A significant mass of statistical data lies ready in the annual volumes which the Board of Trade now provide, and the reports which are issued under the care of our trusty colleague, Sir Alfred Bateman.

But the development which has added 96 millions to the population of central and western Europe on its 1,700,000 square miles has been a development of a very distinctive type, and one which, but for the comparative annihilation of distance and reduction of the cost of transport in the last seventy years, could hardly have taken place, for it is the massing of persons together in urban areas which has occurred, fed from outside, either from the distant rural districts of their own territory, or from the wider fields of other and newer lands.

There is indeed a double movement which statistical research reveals, as stamping its feature more firmly than any other on the present relation of man to society, whether within the limits of the State or the limits of the globe. At one and the same time there proceeds a movement of expansion and a movement of concentration—expansion by the occupation of new lands in nearly empty territories, and concentration by the gathering together of the people in a more rapid ratio than in former epochs in vast urban masses and industrial agglomerations of population, whose food and clothing and means of labour are supplied by more or less distant producers.

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[3] "Emigration and Immigration Returns of the Board of Trade," H.C. 183 (1902).

Much has been written on this topic, but more remains to be gleaned respecting the underlying facts by the careful student. The movement from old centres to new fields of labour, great as it has been in the past seventy years, is not perhaps so large an aggregate movement as that which in civilised States absorbs into cities the overflow of the country, and in several countries, and not by any means in England only, draws away from the fields to more attractive urban centres the population they formerly held.

Seven cities of the Europe of to-day hold over a million souls apiece. Three of these lie however in that eastern European region which we have found to be defective in comparable statistical data. At the present time it is believed that St. Petersburg, Moscow, and Constantinople are million-peopled cities, and they may be credited with having among them 3,400,000 inhabitants to-day. Western and Central Europe, the thirteen States I have been referring to in detail, have the other four and much the greatest of these agglomerations. London, Paris, Berlin, and Vienna boast an aggregate of very nearly 11 million persons, while in the early days of this Society their total could but little have exceeded 3 million persons.

Of cities of half a million and upwards, Europe as ordinarily enumerated has now twenty—and there are sixteen cities of this magnitude in Western and Central Europe. Of these five are in the British Isles, three in Germany.

At the 100,000 limit, so often taken for the index of a city, the twentieth century recognises in Europe a total of 149 such places, with an aggregate population of no less than 47,700,000. In thirty-nine separate places of this type in the United Kingdom and thirty-three in Germany, not much under half of these persons were concentrated. The modern growth of the fascination or the fatality which compels the scattered peoples of older times to crowd together in such aggregations is worth noting, when we look backward to see ten years ago there were one hundred and twenty-one such cities with 37 million residents, thirty years ago seventy with 20 millions, fifty years ago forty-two with only 9 million inhabitants. When last century opened these 100,000-person cities were but twenty-one, and their aggregate residential population did not reach 5 millions. In 1800 barely 1·6 per cent. of the European population enjoyed the advantage or suffered the misfortune of residing in a city of this size. In 1900 nearly 12 per cent. of the inhabitants of Europe were thus housed.

Turning to a recent work, the statistics of which I have made use of, by M. Paul Meuriot, Professor of History at Amiens, students of the phenomenon of the "urban agglomerations" throughout contemporary Europe, will be, I think, rewarded for the labour, and will find corroboration of the townward drift in the tables of this industrious student of M. Levasseur's demographic work.

Supplementing some of his figures by still more recent data, a picture of the growth of that section of the inhabitants of France, Germany, and the United Kingdom resident in 100,000-person cities at the quoted dates, may be gathered from the table which I have thus constructed, and which will afford striking indication of where the new populations are to be found :—

Year.	France.		Germany.		United Kingdom.	
	Cities.	Population.	Cities.	Population.	Cities.	Population.
1801....	3	766,000	2	272,000	2	1,100,000
'51....	5	1,716,000	6	998,000	11	4,620,000
'71....	9	3,280,000	10	2,200,000	18	7,120,000
1901....	15	5,466,000	33	9,129,000	39	13,522,000

There are, however, "cities and cities," even of equal dimensions, and remembering that statistics always involve comparison, it is hardly possible to read a dry list of 100,000-person towns ranged side by side in order of magnitude, without calling up the vast difference of character, of density and environment, of history and pace of growth, which separates these arithmetically equal units of population.

Our own metropolis is a thing apart from all comparison. It has furnished us in the past, and will assuredly do so again in the future, matter for instructive statistical inquiries on which I cannot enter to-day. It must, however, be remembered that the London of the official area included in the foregoing calculation as a single city, is but the kernel of a vaster urban province —spread over the annexed territories of the juxta-metropolitan counties. With its 6,600,000 inhabitants, thus counted, the greater London boasts a population almost equal to that of Belgium, greater than that which is left to the Sultan in Europe —than Portugal or than Sweden, and twice that of all Switzerland; and, to look nearer home, about half as large again as either Scotland on her 19,000,000 acres, or Ireland on her 20,000,000, can show.

But as for census purposes, so too for international comparisons, London has been taken in its smaller sense to mean the 75,000 acres of the older metropolitan unit, and, even thus restricted, I must pause at this point in the comparison of 100,000-person cities, to point out that whereas the international contrast counted London as one city, albeit with 4½ millions inhabitants, she is not, in any proper sense, municipal or other, a unit at all, but is rather a federation for certain purposes of twenty-nine great self-governing boroughs, whereof no fewer than twenty-three might each in their own right with justice claim to be cities in the international list, as places over 100,000 persons each, whereof Islington, with 335,000, would rank before Antwerp; Lambeth be all but the equal of Palermo, and Stepney of Stockholm; while Camberwell exceeds Bordeaux in population, and St. Pancras, Genoa.

Reckoning these metropolitan boroughs as separate places, would give our own country many more 100,000-person cities than were credited to her above, and thus furnish the most remarkable of all types of the congested populations of the twentieth century, since, within the limits even of the narrower London of our day alone, there exists, and there are ruled by mayor, aldermen, and council, more separate aggregates of 100,000 souls than could be counted in all Europe when the preceding century dawned.

Violent, however, are the contrasts which strike the imagination when we group as statistical comrades these new and almost mushroom creations, the urban agglomerations of the last few decades, with the cities of ancient history. Within the immediate sphere of influence of the British metropolis there have sprung up the borough of West Ham with its 267,000 people, which takes its stand just above Nuremberg with her 261,000; Croydon with 134,000, overshadows Kazan by 2,000 head; Willesden steps in before Astrakan, and Tottenham before Utrecht, while away to the north, Sunderland towers over Seville, and Dundee takes numerical precedence of Venice.

In a very opportune publication of the Board of Trade,[4] dealing with comparative international statistics of population and commerce, we were lately reminded what a new character and direction all this urban concentration gives to the industrial conditions of the peoples of other lands as well as our own. For it is not alone in great cities of 100,000 men and upwards, but in much smaller yet densely peopled communities, which are in every way truly urban, that the new additions to our European populations are to be found.

Germany, the most rapidly growing of our immediate continental neighbours, has, in round numbers, increased her inhabitants by

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[4] Memorandum on Comparative Statistics of Population, Industry, and Commerce. [Cd-1199.]

15 million persons during the last thirty years alone, but the additions to the people living in towns of over 2,000 persons in Germany have been 16 millions. This is actually more than the whole growth of the German people. Without an actual reference to the figures, few of us realise that the rural districts of Germany hold fewer persons to-day than they did when the sword was sheathed after the great struggle of 1870, which saw the present German Empire formed, while the absolute reduction in the rural population of France is even greater than that of Germany. A comparison of the changes in the relative bulk of the urban and rural populations of these countries and of our own within the past thirty years is appended in Table I. Much may be said as to the difficulty of uniform definitions of "urban" and "rural" residents respectively, but so far as France and Germany are concerned the dividing line is identical.

It is not, however, in the old nations of Western Europe alone that these agglomerations proceed as by a law of nature: Russia, which I have left outside some of the comparisons I have suggested, apparently boasts now sixteen cities of over 100,000 within her European area, against twelve only five years ago, and six in 1870. Altogether, 5,274,000 persons out of the Russian 114 millions are concentrated now in cities of the type I have been mentioning, and from the tables which M. Troïnitsky laid before us last year at Buda Pest, she could show some forty-five separate places of over 50,000 inhabitants each, with an aggregate population of over 7 million persons.

Even in Sweden, where the population has so vast an area at its disposal, the urban population seems to be growing apace. Before 1840 it was gaining only in the same ratio as the rural, but the rate of advance was 24·4 per cent. between 1871 and 1880, against 6·5 per cent. in the country districts, and 26·22 per cent. in 1881-90, with a rural growth of no more than 0·26 per cent. Stockholm, which to-day holds 300,000 persons, held only 93,000 fifty years ago, and Gothenburg, which returned 131,000 in 1900, had only 26,000 in 1850. The Norwegian growth of towns is comparatively recent, but even there it is now to be remarked that Christiania, which, with its suburbs, contained little over 12,000 persons when last century opened, figures to-day among the European capitals with more than 200,000 inhabitants.

Denmark is to us generally here regarded as a little country, which has solved the problem of agricultural prosperity, but there too we learn that, with all her activity to promote and stimulate agricultural production, it is her urban population which has increased. The towns held only 22 per cent. of her people in 1860. It would appear that they now hold 39 per cent. The urban increase had been 30 per cent. in the decade following 1880, and 44 per cent. in the last ten years, while the rural population, though still increasing, moved upwards by only 3 per cent. in the first of these periods, and, as will be seen from a note to the table appended, it has actually declined in absolute numbers in the very latest record.

It might be thought the case would be far otherwise where new and fertile territories lie open to the farmer; but the new census of the United States tells us a different tale, and with growing wealth and growing numbers, the great population of the States concentrates itself more and more around the urban centres, where industries which promise a quicker road to riches than agriculture are paramount.

When our transatlantic cousins were but 5 million persons, or just so many as we count in our own Canada to-day, as was the case when the nineteenth century began its course, not 4 per cent. of these grouped themselves in places where 8,000 inhabitants or more lived together. It took the first thirty years of the century before a million of the enumerated subjects of the American Republic ranked themselves as townsmen. To-day that million has become 25 millions, out of an aggregate of 76 millions, or just one-third of the total.

Out of the whole increase of 37 millions accounted for since 1870, it is in the towns of the Union, and not on the wheatlands, the prairies, or the ranches that nearly half the increase is to be found, and 17 million additional mouths have gone to swell the urban population of the States in the last thirty years alone. The absolute increase in the urban population of the United States and of Germany is beginning to be greater than our own.

Look where we will, even in our own Colonies, where the broad acreage of Canada or Australia so proudly impresses our admiration, the immigration seems more and more to concentrate itself on setting up as soon as possible an urban community. The latest census figures at least suggest that urbification is going on even there apace, and that it is not wholly, or even mainly, the filling up of the interior with sturdy agriculturists, prepared to wring a livelihood from the soil by the most primitive of arts, that marks the situation of to-day. Concurrently at least with this, growing numbers of the immigrant population are being assigned to the secondary businesses which new cities may afford under the sometimes artificially stimulated industrial activity of these new self-governing States within the Imperial fold.

Canada has a nominal surface nearly equal to that assigned to the conventional Europe of the Old World, with a population somewhat over 5 million persons, which is not much larger, in fact, than the population of the counties of Cheshire and Lancashire in England, and practically identical with that of Holland or of Sweden, and rather over that of Portugal, at the present time. Canada has only added to her population one million persons in the twenty years 1881-1901, and the decennial growth of the Dominion is no more than 11 per cent. in the latest intercensal period, against 12 per cent. in England herself. The largest province of this Colony—Ontario—has indeed risen only by 3·25 per cent. in the last ten years. It would not therefore seem that the local conditions have attracted the immigration once hoped for. But how has the increase, such as it is, been distributed?

The "Year-Book of Canada" takes a place of 4,000 as dividing town from country life, and makes the urban population now 26·12 per cent., against 22·67 in 1891. The rural element in this largely unpeopled region has actually declined from 77·33 per cent. to 73·88. In Ontario the absolute numbers of the country residents are fewer in the decade, and the townsmen 100,000 more numerous. The townsmen of Quebec are likewise more than they were, and the rural element drops from 75 to 71 per cent. Even in Manitoba the rural ratio is lower than it was, and British Columbia has two-fifths of her population aggregated in what are described as towns—a larger proportion than obtains in France. In the Dominion as a whole there are 538,000 more persons enumerated than at the last census, and more than 300,000 of this increase seem located in the towns, the growth of urban citizens being 28 per cent., against only 6 per cent. in the open country. Moreover, it is not encouraging to learn that the declared settlers of the last three years have averaged only 46,000 per annum, whereof not so much as one in four came from the United Kingdom.

In Australia the increase of population has been relatively greater in recent years. There is nominally not much under 3 million square miles of territory within the lately formed Commonwealth. It has a population only slightly under 3,800,000 persons, of whom two-thirds or nearly so—2,560,000 inhabitants—are found to cling to the 400,000 square miles of the smaller areas of the older Colonies, New South Wales and Victoria, where, whatever may be the test of townsmen as distinct from country settlers which our antipodean fellow subjects adopt, I find the "urban" element is already half as great again as the "rural" quota—or 59 per cent. of the whole, a ratio higher than obtains in so old a country as Germany itself, and largely in excess of either the American or the Canadian proportion. The cry of a wage difficulty and unemployed labour in Melbourne and other towns merits attention in commenting on this matter.

Even as regards the smaller communities which are settled on the wider areas of Queensland and South and West Australia, the population enumerated as housed in "municipalities, excluding "shires," in "corporate towns," and so on, make up not much under half-a-million persons, or over 38 per cent. of the total.

Unless there is a fallacy here in the terms of classification employed, I submit that the problem of the growing devotion of new settlers in a new country to the building up of new urban agglomerations, with urban wants and urban corporate life, as the easier way to win wealth, is worth statistical investigation, to see whether, if the facts be as the figures suggest, our best service to the Colonies of the Empire would not be to foster land settlement rather than town planting, and to export to them a hardier race to subdue the soil and replenish the earth.

Thus far I have sketched the changes which seventy years have brought in the position of the United Kingdom in respect of its home population, its colonial environment, and its oversea responsibilities, with the parallel growth of other nations; and I have commended to your further study that emphatic characteristic of our times, whereby State after State, as it grows richer, more than ever tends to concentrate its population in purely urban centres. But no outline, even of a suggested inquiry into the statistics of national well-being, would be complete if it stopped at the numbering of our units of population, or the significance of their concentration in industrial masses.

The ability and the strength of this nucleus of the British Empire to play its part will depend on the growth displayed in the material possessions of its individual subjects as well as in the development of their number. Estimates of national wealth have been at all times fascinating study for the statistician. I do not need to do more than remind you of figures which a long line of eminent students have supplied in the records of our own Society.

Nothing, of course, is easier than to question, in one detail or another, the huge aggregate of millions sterling in which such estimates of the growth of aggregate capital or aggregate income must be expressed. I have not been able always to accept every line even of our good friend Sir Robert Giffen's famous valuations. But, whatever reservations may be hazarded in matters of detail, there is no dispute that these and earlier valuations do constitute a continuous picture of advancing accumulations through good times and ill, which has built up for us a national position far stronger than of yore, and endowed us with an ability which grows beyond the population's growth. From the estimate of 1833, quoted in Sir Robert Giffen's paper of 1889, which put the nation's property at 3,600 million £, these valuations have risen to 6,000 million £ in 1865, and to 10,000 million £ in 1885, or from 144*l.* to 270*l.* per head in that interval. I am unwilling to forestall the figure of Sir Robert's promised later guess, but as these guesses rest on the substantial basis of the published data of our Inland Revenue Department, and as the statistics of that office are yearly becoming fuller and more interesting, it is certain no one will be surprised to find a much higher total quoted for the accumulated property of the British nation at the opening of the twentieth century, even if the large further increase on the total of 1885, which the other day he suggested to the Bankers' Institute, be not quite realised.

But the bare figures of the Income Tax Assessments tell the same tale in another form, the yearly revenue coming under the notice of the authorities having risen from much under 300 million £, fifty years ago, even including an estimate for Ireland, to 833 million £ in 1901. There are others here who can tell better than I can what a study of the wages records of the country reveals as to the aggregate growth of the earnings of the masses, who form the non income tax paying section of the community, while our good colleague, Mr. Brabrook, has thrown a striking light on the history of the accumulation stored by savings banks and thrift societies, in his last report, which gave these funds a total of 340 million £.

Familiar to us all are the figures which mark the growth of our foreign trade, issued with a promptitude which surprises many critics abroad, by the departments concerned, but watched, I am tempted to think, with almost exaggerated anxiety in the monthly fluctuations which they show. Great as their importance is, it falls very far short of that continuous but badly-measured current of internal trade and home production and exchange which finds no official chronicler, although the swelling volume of the daily business and augmenting needs of forty millions of people yields so solid a section of the aggregate profits of the nation, and almost leads one to echo Mr. Andrew Carnegie's recent dictum that "foreign commerce was a braggart always in evidence, home "commerce the true king."

But I am anxious to-day not to enter on these large discussions of the best signs of national progress, nor to contest the practicability of adopting a scientific formula for determining the measure of our growth, as we were lately invited to do by one of our younger fellows. I propose to rest for the moment on one material proof of national well-being, the development in the numbers and the value of the houses of our people.

However imperfect and rough may be the measure, I do not know if a much better one could be found than that which shows how the families of a nation are housed at one time and another. If we know this, we will know something at least of how the population as a whole were faring at any contrasted dates.

From the moment when the nomadic life of the hunter and the shepherd is abandoned for settled industry, of whatever type, the dwelling a man lives in usually at least furnishes a concrete objective fact which cannot altogther escape observation, exhibiting roughly capacity to spend on one of the most pressing needs of humanity—that of shelter. We must, no doubt, make some exceptions here, as in so many other statistical problems. A primitive cave-dweller may have a roomy tenement the dimensions of which we cannot very well value or measure. A river-inhabiting Chinaman's "house" may scarcely be accessible for the purpose desired. In many forms of agriculture also it is recognised that the house which shelters the peasant and his family is itself an essential appendage of the land he cultivates. Even in our own country, at this day, farm houses are merged in and form part of the value of the land for property-tax assessments. Similarly, though perhaps in a lesser degree in our times than formerly, the dwelling is at the same time either the workshop or the office alike of the minor manufacturing classes and of certain grades of the professional class.

But none the less, with all their imperfections, in the dwellings of a people, in their number, in their dimensions, and in their value—as it catches the impartial eye of the tax gatherer—lies a consistent and consecutive story such as the statistician loves to find. I am inclined to think that in this direction good scope for further statistical inquiry stands temptingly open.

Just as the recent publications of the International Statistical Institute, and the figures of Mr. Jacques Bertillon, have suggested to me comparisons in the relative growth of populations, so the lately issued forty-fifth report of the Commissioners of Inland Revenue for the United Kingdom offers, in the wonderful mass of statistical detail which Sir Henry Primrose and his colleagues now give us, an answer, if an approximate answer, to the question: "How are the growing millions of British citizens housed now "and in former times?" Assuredly the tale thus told is one of progress, not of retrogression, whether this aspect of the nation's present condition be compared with parallel data of seventy or twenty years ago, or even ten years ago.

In thus appealing to the experience of the revenue statistics to give their picture of the national resources at any particular date, I am entering no novel path. Twice in the last twenty years, at all events, have the records of the British Inhabited House Duty been appealed to in this Society for evidence as to the greater or less diffusion of wealth, and the later and fuller facts now available under this head, in the largely extended statistical tables of the Inland Revenue Department, are, I think, increasingly significant, and deserve fuller and closer survey than I can give to-day. Solid official material is there collected, it is to be remembered, not with a view to establish one or other theory of national growth, but simply as an incident of official administrative work.

It is a huge material fact which must strike any candid inquirer into our internal national condition, that in the "house "property" of the Kingdom stands an incontestable and visible form of that accumulation and investment of individual capital, which we have often discussed here in its general aspect.

In the estimates of Dr. Beeke, in the income tax discussions at the commencement of the century, a valuation of the "houses" of Great Britain found a place at no more than 200 million £. The detailed estimates of Mr. Colquhoun and Mr. John Lowe in 1812 and 1823 put the total at no more than double this figure, although their figures were for the whole United Kingdom. If to the annual values disclosed by the renewed income tax of 1843 be applied the scale of capitalisation used in subsequent estimates, the capital invested in houses may be similarly computed. The valuations of houses in 1865-75-85, which appear in our *Journal*, and the probable growth of house property in the United Kingdom—for Ireland is included in the later data—may be shown as under:—

Earlier Estimates.			Later Calculations.		
Year.	Authority.	Capital Value.	Year.	Authority.	Capital Value.
		Million £.			Million £.
1800....	Beeke	200*	1865	Giffen	1,031
'12....	Colquhoun	400	'75		1,420
'23....	Lowe	400	'85		1,927
			'95....	Milner	2,244
'43	Income Tax Assessment......................	585*	'99....	Inland Revenue	2,428
'53....	Do.	660*	1901	Income Tax Assessment	2,685

* Great Britain only.

These figures tell something of one direction where national capital has accumulated year by year, whatever be the fluctuations of external trade; but it is impossible not to compare it with the opposite shrinking of values which the land of this country, where not utilised for the "planting of houses," has undergone of recent years—a shrinkage which, but for the very largely over-balancing growth, alike in house property, and in almost all other forms of wealth, must have left as severe a mark on the nation's prosperity as it has on that relatively small but unlucky section which owns agricultural land.

Earlier Estimates.			Later Calculations.		
Year.	Authority.	Capital Value.	Year.	Authority.	Capital Value.
		Million £.			Million £.
1800....	Beeke	825*	1865....	Giffen	1,864
'12....	Colquhoun	1,280	'75....	Do.	2,007
'23....	Lowe	1,200	'85....	Do.	1,691
			'95..	Milner	1,012
'43	Income Tax Assessment	1,370*	'99....	Inland Revenue†	971
'53		1,390*	1901....	Income Tax	947

* Great Britain only.

† Memorandum presented to Royal Commission on Local Taxation. [Cd-201, p. 213.]

The greatly lower totals of the last three calculations are due not alone to the drop in rental, but to the number of years' purchase adopted by the inland revenue authorities. Sir R. Giffen took 30 years' purchase in 1865 and 1875, and 26 years in 1885. The later official estimates of the capital value of land in the death duty tables are made on only 18 years' purchase of the gross and the 20$\frac{4}{7}$th years' purchase of the net income tax assessment. Had the 26 years' figure of the unofficial calculation of 1885 been again applied to the latest assessment, the capital value would not have sunk so low, but still to little over 1,300 million £, while on the inland revenue scale the capital value shown is 947 million £ only.

The gross annual value of the buildings or "messuages" of the country, to adopt the phrase which our Inland Revenue authorities prefer to use, leaving out non-taxable structures such as government property occupied by the Crown, cathedrals and churches, and omitting, as valued under other categories, buildings forming part of particular businesses, such as railway stations and farm houses, now reaches a total of 179 million £. How does this figure compare with the parallel valuation of earlier years? We cannot, it is true, take the third decade of the past century, co-eval with our Society's birth, for our guide as a starting point here, for these Property Tax valuations in their present form date only from 1843, and we can, therefore, go back only to that period to see what the rental of houses and trade premises then were. But in round millions the annual valuations under this head have grown by the strides which the following statement sets out:—

Year.	England and Wales.	Scotland.	Ireland.	United Kingdom.
1843	35·5	3·0	Not assessed	38·5†
'51	40·6	3·8		44·4†
'61	49·5	5·1	—	54·6†
'71	75·3	7·3	3·7*	86·3
'81	102·4	11·8	3·2	117·4
'91	123·7	13·2	3·6	140·5
1901	157·2	17·2	4·6	179·0

* The Irish assessment included farmhouses in this year.
† Great Britain only.

But it is not the absolute growth of house property so much, as a consideration of certain elements of that growth, that is wanted now, and with the aid of the Inhabited House Duty figures now available, it seems not impossible to get behind the total Property Tax Valuation at least so far as Great Britain is concerned. Ireland, among its other incidents of differential financial treatment, has what is not perhaps exactly a grievance, an exemption from house duty altogether. But the Irish share of the aggregate valuation of messuages of all sorts appears to have been only 4½ millions of the total.

Deducting this quota from the total valuation of 179 millions value, leaves 174,375,000*l.* for house rental in Great Britain. This compares so nearly with the 175,238,000*l.* of the House Duty Valuation of both charged and exempted premises, that there can be no very great error—after allowing for such differences as the inclusion of 811,000*l.* of farm house rental in the house tax and its exclusion from the income tax assessment—in treating the two as practically identical, and using the divisions of the house duty valuation as illustrative of the several sections of which the rental of the messuages and premises of all sorts appearing in the income tax valuations is made up.

The aggregate assessment, it may be noted, is made up in not very unequal proportions of the rental of two distinct classes of premises, properties exempt from, and properties subject to, house duty, these classes dividing themselves as under:—

House Property in Great Britain in 1901.	Number.	Value.
		£
(*a.*) Premises exempt as hospitals, schools, &c., or as royal and diplomatic residences	29,000	2,899,000
(*b.*) Premises exempt as used only for trade....	562,000	38,826,000
(*c.*) " under 20*l.* rental ...	5,613,000	52,131,000
Total premises exempt from house duty	6,204,000	93,856,000
There are thus left subject to the tax—		
(*d.*) Premises charged to house duty	1,630,000	81,381,000
Total premises accounted for	7,834,000	175,237,000

Now it is only the two large sections (*c*) and (*d*) of this total that furnish precise material for comparing the dwellings of the people at different dates. Putting these together, I take it as a starting point that there are in Great Britain at the present day 7,243,000 premises, great and small, recognised as "houses" by our Inland Revenue officials.

The figure is not far removed from that arrived at by a wholly different set of investigators in the same year 1901, viz., the census enumerators, who, for England and Scotland together, make the "inhabited houses" 7,193,000. None of us who have followed the frequent misunderstandings as to what constitutes a house for census purposes, will be surprised to find some little difference in the totals, but the comparative closeness of the figures above quoted suggests that, for such a general comparison as the present, we may take, without risk of serious error, a round figure of 7,200,000 as sufficiently representing the enumerated units of the dwellings of the people of Great Britain at the present time. If this figure be placed in conjunction with the census total of population, which, without Ireland, was just 37 millions, all told, it gives a proportion of 5·14 persons to every house. The calculation of the census estimates of England gave 5·19 persons for each dwelling. The Scottish rate, which of course obtained on about one-eighth of the houses in my total (for about that number are found north of the Tweed), stood only apparently at 4·83 per house.

Having got a figure for 1901, we may ask how it compares with earlier data? and it becomes a question how far back are we to look in this matter? There are "hearth tax" figures as far away as the end of the seventeenth century, on which Gregory

King founded his estimate of the people of England and Wales in 1696. They will not help us much, however, as neither values nor dimensions are given. For practical purposes we need not go back to these pre-statistical times, but keeping to the date I have already made a starting point, the "houses" enumerated in 1833, for the duty, which then fell on premises down to 10*l.* annual value, were given as 442,000 in the Revenue Returns of the day. Applying this figure to the 1831 census record of inhabited houses, it was concluded that the total of 2,850,000 houses in Great Britain seventy years ago must have contained 2,408,000 dwellings below the 10*l.* valuation limit.[5] The proportion was therefore over 84 per cent. of the census total. If the present scale of assessment be comparable with the old, the last Inland Revenue report tells of just 3,273,000 enumerated dwellings valued at a less rent than 10*l.* in Great Britain at the present day. This is little over 45 per cent. of the 1901 census total of 7,200,000 dwellings.

Less than half the dwellings of the people of Great Britain are in this twentieth century under the rental of 10*l.* per annum, whereas in 1833 the under 10*l.* houses were between five and six times as numerous as those above this figure. The enormous shifting of the balance from the lower to the higher grade of dwellings, which has characterised the period under review, is best brought out by sharply dividing the enumerated houses of Great Britain at and above a 10*l.* rental from those below that figure, when the comparison stands thus at the contrasted dates:—

Classes of Houses.	1833.	1901.	Increase per Cent.
	Number.	Number.	
Under 10*l.* rental	2,408,000	3,273,000	36
Of 10*l.* rental and above	442,000	3,970,000	798
Total	2,850,000	7,243,000	154

There are not only more houses of all grades available now than of yore, in proportion to the population—for the aggregate rate of increase is materially greater than that credited to the inhabitants of Great Britain—but, what is more significant for my present purpose, the houses of the higher grade, from little exceeding 15 per cent. of the whole supply seventy years ago, have to-day approached 55 per cent. of the total. Even if all the houses now recorded which are of a special class, and, although dwelt in, were used also as trading premises, hotels, &c., and therefore taxed in a different category and at a lower rate, to be excluded from the 1901 total, that aggregate of over 10*l.* premises would but little diminish the impression which the growth of better class houses gives of solid national advancement.

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[5] MacCulloch's "Account of the British Empire" (1854), vol. ii, p. 523.

Thus reduced in the later years, the number of houses over 10*l.* rental in Great Britain may be analysed more closely thus at three contrasted dates:—

Classes of Inhabited Houses.	1833.	1875.	1901.
	Number.	Number.	Number.
Houses of 10*l.*—20*l.* rental	227,604	921,709	2,340,066
„ 20*l.*—40*l.* „	130,405	322,960	834,843
„ over 40*l.* „	84,433	246,366	352,915
Total number............................	442,442	1,491,035	3,527,824

Again, placing the definition of a better class house a little higher in the scale, at a rental of 20*l.* and over, the data of 1833 make it plain that the 215,000 occupiers of 20*l.* and over premises were at that time only 1·3 per cent. of the 16,200,000 inhabitants of Great Britain, whereas, even omitting from the later calculation all residential shops, hotels, lodging-houses, and farmhouses, the occupiers of the 1,188,000 purely private dwellings of this rental must now form 3·3 per cent. of the entire population of 37 millions. Put in another way, seventy years ago 8 per cent. of the enumerated dwellings of Great Britain were of 20*l.* and upwards rental; to-day 16 per cent., and rather more, attain this scale of rental.

There is yet another seventy years' comparison possible here, for the official figures of 1833 distinguish the aggregate values at which the "inhabited houses" of that period were assessed, both in the class between 10*l.* and 20*l.* and over the 20*l.* limit. Compared with later years the contrast here also is remarkable:—

Classes of Inhabited Houses.	1833.	1875.	1901.
	£	£	£
Houses of 10*l.*—20*l.* rental	2,998,000	12,354,000	31,499,000
„ 20*l.*—40*l.* „	3,446,000	8,716,000	23,390,000
„ over 40*l.* „	6,160,000	21,741,000	32,349,000
Total annual value	12,604,000	42,811,000	87,238,000

If these data are accepted as really comparable, the lowest class shown in the table has grown in aggregate value by more than *ten* times, the second class by *seven* times, and the higher class by somewhat more than *five* times in a period wherein the inhabitants of Great Britain have not much more than doubled. How much is due to the higher rents of later days in these results is, I think, a fair subject for inquiry; but even if the change is thus accounted for, it will have to be remembered that the ability to pay the higher figures indicates solid national growth.

When Lord Goschen, in his presidential address of 1887, and Sir Robert Giffen, in his paper of 1885, drew attention to the rise in the standard of living denoted by more and better class house accommodation, neither had quite so full an analysis of the house duty grades of dwellings as the Board of Inland Revenue have now published.

Sir Robert Giffen, founding on the same 1833 figures I have already noticed, pointed to an increase of all houses of between 85 and 90 per cent. in the forty-seven years' period 1833-80, compared to a population growth of 80 per cent. only. While he took the increase of houses under 10*l.* rent to be less than 40 per cent., the smaller section of houses between 10*l.* and 20*l.* value rose in number over 300 per cent., houses over 20*l.* showing likewise a great but not quite so great an increase, or 230 per cent.

Lord Goschen, taking a more limited field of survey, compared the rate of growth of the period 1875 to 1880 with that of 1880 to 1886. In the first he found a development of private dwellings in every grade above the 20*l.* house duty limit which was fairly equal, and an altered and slower increase, reflecting a check to national prosperity, in the later period. He found that it was mainly in the houses of higher rental that the rate of increase had been checked; and he claimed the house duty records to prove that the houses occupied by the lower middle classes, the owners of "moderate incomes," had so steadily increased, as to demonstrate a wider distribution of comfort and ability for expense in the solid centre of society. When he passed in review the grades of houses under the house duty limit, he found the increase varied in the opposite direction—the houses nearer 20*l.* rental increasing rapidly, and the increase being small or non-existent at the lowest point of the scale.

What then is the picture which the revenue tables now reveal, both as regards enumerated houses below and charged houses above the duty limit, and in the several grades of dwellings which are now discriminated?

To avoid all risk of error in the older figures, it may be well to go back only to Lord Goschen's earlier year, 1875, and his second starting point, 1880, and confining the examination to the private dwellings as distinct from residential shops, hotels, &c., specially set out in the returns, the course of the more recent changes may be then shown thus:—

Dwelling Houses in Great Britain.	1874-75.	1879-80.	1890-91.	1900-01.
	Number.	Number.	Number.	Number.
Annual value under 10*l*.	3,000,000	3,091,000	3,275,000	3,273,000*
„ 10*l*.—20*l*.	922,000	1,180,000	1,675,000	2,340,000
„ 20*l*.—40*l*.	323,000	411,000	572,000	835,000
„ 40*l*. and upwards	246,000	302,000	306,000	353,000
Total	4,491,000	4,984,000	5,828,000	6,801,000

* Including 43,000 artizans' tenements.

There is, it will be seen, in the last quarter of a century no material increase in the under 10*l*. houses, which are only 9 per cent. now in excess of what they were in Great Britain in 1875. Indeed, had the year 1899-1900 had a place in my table, the latest total would have revealed an actual diminution in numbers of 55,000 in this category. The material lifting up of houses begins at the 10*l*. to the 20*l*. level, since the 922,000 houses of that grade in 1875 have become 2,340,000 to-day, and in the last twenty years, since 1880, their total has actually doubled. Over the tax limit of 20*l*. the same growth is apparent in the 20*l*. to 40*l*. houses; while, as on the last occasion, when these data were examined, although there is still growth, there is much less growth in the relatively small class of the higher rented houses.

The increasing rate at which houses of one type or another are now being provided in Great Britain, is a patent fact that meets the eye of each of us day by day. It stands out forcibly in the Preliminary Census Report, where we are told that whereas the population of England has increased by just 12·17 per cent. in the last intercensal period, and the recorded inhabited houses increased 15 per cent., those which were actually building were more numerous by 62·28 per cent. The census of Scotland, although the report is silent on the significant figures, records a somewhat similar advance.

Round, perhaps, rather than actually in, the great urban centres of England, the new census points most significantly to the activity of the house builder, and that in more ways than one. Not only have we large increases in the numbers of inhabited houses in the counties surrounding the Metropolis, but compared with 1891 the number of persons distinguished as employed in house building seems to have advanced out of all proportion to the increase of male population over 10 years of age, the rate being 91 per cent. in Essex, 86 per cent. in Middlesex, 72 per cent. in Surrey, and 62 per cent. in Kent. The houses reported also as in process of erection in these four counties alone are, it may be noted, respectively 172, 144, 192 and 144 per cent. in 1901 over those accounted for in 1891. But as there seems reason to regard the position of house-building in 1891 as exceptionally checked, it may be well to compare the growth of population and of inhabited and other houses since 1880 in Great Britain as a whole as under:—

[In thousands.]

Years.	Enumerated Population.	Houses in Census.			Houses in House Duty Tables.		
		Inhabited.	Uninhabited.	Building.	Private Dwelling Houses Charged.	Residential Shops, &c., Charged.	Exempt from Charge as under 20*l.* Rental.
1881...	29,710,	5,571,	446,	51,	734,	347,	4,332,
'91...	33,028,	6,269,	423,	44,	878,	379,	4,946,
1901...	36,998,	7,193,	508,	71,	1,188,	442,	5,613,

These remarkable statistics emphasise the development I have indicated. The over 20*l.* private dwellings are 60 per cent. greater in twenty years, while the increase in residential shops is less than that of the population generally, or 21 per cent. only.

An examination of the places where the greatest growth in number of houses and greatest growth in persons engaged in building appear, would itself form an interesting subject for further and much closer study, but it is obvious that the movement *out* from the centre of London to that surrounding province, now being daily covered with houses at a accelerating rate, is the most distinctive feature of all.

The following table shows that the principal increases in the numbers and annual values of private dwelling houses during the period 1891-92 to 1900-01, compared with the percentage increase of population in the nearly identical period 1891-1901, were to be found in the following districts:—

Population Increase.	Areas.	Number.	Per Cent.	Amount.	Per Cent.
Per cent.	Metropolis—			£	
23·8	Kent	14,556	64·9	390,000	41·7
3·1	Middlesex	10,894	5·0	726,000	5·1
12·4	Surrey	18,410	18·5	611,000	16·3
7·3	Total metropolis	43,860	13·0	1,727,000	9·1
45·6	Middlesex (outside metropolis)	32,798	75·3	1,208,000	63·9
38·2	Essex	33,900	132·0	929,000	104·7
24·0	Surrey (outside metropolis)	17,817	57·3	780,000	40·3
9·9	Sussex	12,787	50·7	512,000	34·3
12·2	Lancashire	19,843	32·9	443,000	16·1
11·7	Yorkshire	12,675	33·7	425,000	25·0
16·3	Kent (outside metropolis)	10,896	45·4	421,000	30·5
11·6	Cheshire	8,732	58·1	303,000	39·8
15·7	Hampshire	7,445	42·5	297,000	30·1
25·1	Glamorgan	7,961	67·7	264,000	62·6
12·1	England and Wales	270,055	33·0	9,621,000	23·0
11·1	Scotland	28,068	38·6	998,000	29·8
12·0	Great Britain	298,123	33·5	10,619,000	23·5

The case of Essex, where there has been a rapid manufacture of complete new "towns," like West Ham, Ilford, &c., overtops the others. The population, fed by London's overflow very largely, has grown by 38 per cent. since 1891, but the increase of houses of 20*l.* rental and over has been 132 per cent. in this short interval. The aggregate value has risen, not quite so rapidly, by nearly 105 per cent. The table bears incidentally witness also to what the census tells of the relative thinning of central London, since the section of the Metropolis shown above as belonging to the old geographical county of Middlesex rises only 5 per cent. in the number and value of its houses and 3 per cent. in population, while ex-Metropolitan Middlesex has 75 per cent. more houses than before, and an aggregate addition to her house valuation of 64 per cent.—both figures largely in excess of her population growth of 46 per cent.

There has thus been on the whole in less than ten years a 33½ per cent. increase in Great Britain in the dwellings of the people lying over the 20*l.* limit—an increase considerably above the increase in value, which reaches 23½ per cent. only. These particulars are disclosed by adding, as I am permitted by the kindness of Sir Henry Primrose to do, the data as regards number to that shown in the Report under value.

Moreover, the Inland Revenue Report before quoted affords plentiful evidence of the greater increase of 20*l.* to 40*l.* dwelling houses than those of higher grades. I give below the original table, omitting only—as the item possesses an exceptional character—the Artizans' Dwellings Tenements (which, under a recent amendment of the law, are charged to duty separately when over 20*l.* value)—which are stated to have increased in number by 692·7 per cent., and in value by 538·7, between 1892 and 1901.

Class of Private Dwelling House.	Increases between 1891-92 and 1900-01.			
	In Number.	Per Cent.	In Annual Value.	Per Cent.
			£	
20*l.* and under 25*l.*	101,000	53·4	2,202,000	53·7
25*l.* „ 30*l.*	64,000	44·1	1,694,000	44·4
30*l.* „ 41*l.*	83,000	33·0	2,907,000	33·7
41*l.* „ 50*l.*	18,000	29·4	778,000	28·5
50*l.* „ 61*l.*	16,000	17·8	876,000	18·0
61*l.* „ 80*l.*	6,870	15·1	466,000	14·8
80*l.* „ 100*l.*	3,103	9·8	275,000	10·1
100*l.* „ 200*l.*	3,222	5·8	459,000	6·4
200*l.* „ 500*l.*	1,418	7·6	438,000	8·5
500*l.* and upwards	387	12·7	469,000	16·0

Had I not carried to much too great a length the latest of these topics on which I have been led to touch, I could have pointed to much interesting further material for your consideration, in the relative movements of different grades of private dwellings, and on the other section of the house duty statistics—the residential shops, the hotels, public houses, coffee houses, and lodging houses of the country, both as a whole, and in particular divisions.

But I refer you to the Report itself which has suggested these remarks, and commend to the framers of new papers among our Fellows the wealth of material there awaiting intelligent analysis, and bearing on the housing of the units of our home population, and on other of the economic problems of the day.

I think, however imperfectly, I have now said enough to show you to-night that we have good reasons to conclude that our common country is a vastly bigger, and a vastly more complicated, machine, as regards its external relations or its internal development, than our fathers had to deal with when the Royal Statistical Society was founded; that it has grown in numbers, in wealth, and in power; grown, too, as I indicated at the outset, enormously in proportion in territorial responsibilities—responsibilities which may yet entail sacrifices that will test the national spirit, courage, and perseverance. If the land of "All the Britains" is to be occupied, held, and developed, we must more seriously resume that "export" of brave and courageous men, ready to fill the waste places of the earth, and where government falls on the shoulders of our race, to take up the burden with a stout heart and confidence in our national future. We can make our Empire strong by expansions of this type, rather than by the mere planting of colonial towns on the fringe of unoccupied regions.

The most casual survey of the dimensions to which, after seventy years, the political fabric of the British Empire has attained, enforces the lesson that fully to hold our own with other growing nations, and rightly to discharge the world-wide responsibilities which Providence has entrusted to us over subject races, there must be no slackening of our capacity for serious duty and serious work at home, no resting on the bye-gone reputation of our fathers for industrial enterprise abroad, no hesitation in facing the newer political problems of these altered times.

Under the British flag are gathered many races and many territories; loyal and hardy, if not numerically numerous, colonial forces; native armies and devoted princes place their swords at the disposal of the Empire. But perhaps I shall not greatly err in claiming that after all, the living brain and centre of this mighty State rests here at home, and neither the colonist nor the Indian can fight our battle for us, welcome as their co-operation is. The heirs of an historic tradition which is all their own, each unit of the still growing millions of our own island of Great Britain must remember the part he has to play to make his country strong. If largely growing urban conditions and augmenting dependence on distant lands for much of the raw material of our home industries and for a considerable share of our food supply are, as it would seem, imposed upon us by the economic conditions of the present, the obligation is all the more enforced to maintain that mastership of the sea which in the past has served to unite rather than to sever the scattered factors which made up the British Empire, and which has kept open to our teeming population unrestricted highways for trade with all the regions of the globe.

That the home nation still grows and strengthens in material wealth I think my figures show. The statistician records this much for your satisfaction and encouragement. He finds, however, that the great empire resting on the fulcrum of these islands is still building and still expanding, and he points to the obligations its future maintenance must entail. Let none of us be content, therefore, to sit down and admire the proportions of the edifice, but one and all determine by personal effort where we may, and by a readier tolerance, in all cases, to any claims of the nation on the private purse, to face with courage and with perseverance the task of holding what the Empire builders of the past have won, remembering—as we may so fitly do on this the 50th anniversary of the funeral of the Great Duke, who preached above all things the claims of "duty," alike on the citizen and the soldier—that "not once or twice in our rough island story the path of duty "proved the way to glory."

APPENDIX.

Table I.—*Population Distinguished as Urban and Rural in the undermentioned Countries.*

Country.	About 1870.			About 1900.		
	Urban.	Rural.	Percentage classed as Urban.	Urban.	Rural.	Percentage classed as Urban.
United Kingdom	15,697,000*	15,787,000	50	29,559,000*	11,898,000	71
Germany	14,791,000†	26,268,000	36	30,633,000†	25,736,000	54
France	11,235,000†	24,868,000	31	15,030,000†	23,687,000	39
United States	8,072,000‡	29,486,000	21	24,992,000‡	50,485,000	33

* Population resident in "urban districts."
† „ towns of 2,000 inhabitants and upwards.
‡ „ „ 8,000 „ „

Table II.—*Urban and Rural Population of Denmark in* 1880, 1890, *and* 1901, *with the Area in Square Miles.*

[*From the* "*Statistisk Aarbog*, 1901."]

	Urban Population.			Rural Population.*			Area. Square miles.
	1880.	1890.	1901.	1880.	1890.	1901.	
Seeland	320,904	428,957	539,366	400,799	405,166	420,687	2,860
Bornholm	13,057	15,998	18,256	22,807	22,763	22,633	225
Laaland-Falster	18,469	21,647	25,805	78,538	78,905	79,216	672
Fionie	54,314	68,240	85,664	192,140	188,584	194,121	1,325
Jutland	145,224	187,402	267,474	723,287	754,718	796,318	9,762
Total	551,968	722,244	936,565	1,417,071	1,450,136	1,512,975	14,844

* Population of rural communes.

Note.—In 1902 the rural population was reduced to 1,490,635 persons, in consequence of the inclusion of part of a rural commune in the town of Copenhagen.

TABLE III.—*Urban and Rural Population of Canada in* 1891 *and* 1901, *with Area in Square Miles.*

[*From the "Statistical Year-Book of Canada for* 1901."]

Provinces.	Urban Population.		Rural Population.		Area. Square Miles.
	1891.	1901.	1891.	1901.	
Ontario	532,016	635,180	1,582,305	1,547,767	222,000
Quebec	367,544	477,687	1,120,991	1,171,211	347,350
Nova Scotia	58,306	84,540	392,090	375,034	20,600
New Brunswick	58,643	61,722	262,620	269,398	28,200
Prince Edward Island	11,873	12,080	97,705	91,179	2,000
British Columbia	41,823	71,010	56,350	107,647	383,300
Manitoba	25,639	47,720	126,867	207,227	73,956
N.-W. Territories*	—	13,294	66,799	172,865	2,529,140
Total of the Dominion	1,095,344	1,403,233	3,737,895†	3,967,818†	3,653,946‡

* Including Yukon.

† Including 32,168 persons in 1891 and 25,490 persons in 1901 not separately distinguished.

‡ Not including Franklin, but inclusive of 47,400 square miles, the area of the "Great Lakes and Rivers."

TABLE IV.—*Urban and Rural Population of Australasia in* 1891 *and* 1901, *with Area in Square Miles.*

Colony.	Urban Population.		Rural Population.		Area. Square Miles.
	1891.[a]	1901.[b]	1891.[a]	1901.[b]	
New South Wales[c]	730,019	859,601	402,215	499,532	310,700
Victoria	619,581	635,981	520,824	565,525	87,884
Queensland[e]	142,659[d]	175,279[d]	251,059	327,987	668,497
South Australia	123,167[f]	152,529[f]	197,264	210,075	903,690
West Australia	23,701[g]	96,807[g]	26,081	87,317	975,920
Tasmania	42,113[h]	42,676[h]	104,554	129,799	26,215
Total Australia	1,681,240	1,962,873	1,501,997	1,820,235	2,972,906
New Zealand	270,343[i]	350,202[i]	356,315	422,517	104,471
Total Australasia	1,951,583	2,313,075	1,858,312	2,242,752	3,077,377

Note.—Aborigines and Maoris are excluded except where mentioned.

[a] From Census Returns for 1891.

[b] From Preliminary Returns of Census of 1901.

[c] Population including about 4,000 Aborigines.

[d] "Population in Municipalities" (excluding "Shires").

[e] Population including about 6,500 Aborigines.

[f] Population of "Corporate Towns" only.

[g] Population "In Municipalities."

[h] Population of Hobart and Launceston (being the only cities of 5,000 inhabitants).

[i] Population of "Boroughs."

Table V.—*Houses in Great Britain. Number of Premises Exempt from and Charged to the Inhabited House Duty.*

Houses.	1874-75.	1879-80.	1890-91.	1900-01.
	Number.	Number.	Number.	Number.
(*a.*) Premises exempt as hospitals, schools, workhouses, and royal and diplomatic residences	7,523	15,638	24,351	28,747
(*b.*) Do. as used solely for trade	350,623	370,703	427,380	561,585
(*c.*) Do. as dwellings under 20*l.* rental—				
(1) Under 10*l.* rental	3,000,370	3,090,650	3,274,963	3,273,162
(2.) 10*l.*—15*l.* „	590,383	754,965	1,088,329	1,568,678
(3.) 15*l.*—20*l.* „	331,320	424,700	586,511	771,388
Total: Houses not charged to duty	4,280,219	4,656,656	5,401,534	6,203,560
(*d.*) Premises of 20*l.* rental and over, charged to duty as private dwelling houses—				
(1) 20*l.*—40*l.* rental	322,960	411,370	572,506	834,843
(2.) 40*l.*—60*l.* „	115,630	141,903	150,093	184,280
(3.) Above 60*l.*	130,736	159,895	155,570	168,635
(*e.*) Do. as residential shops	193,046	227,709	249,944	293,821
(*f*) Do. as hotels, public houses, coffee houses, and lodging houses	70,014	81,382	98,177	116,186
(*g.*) Do. as farmhouses	32,162	33,693	31,185	32,450
Total: Houses charged to duty	864,548	1,055,952	1,257,475	1,630,215
Total: All premises	5,144,767	5,712,608	6,659,009	7,833,775

Proceedings on the 18*th November*, 1902.

After the preliminary formal business of the Meeting, the President reported that the Council had sent a loyal address of congratulation to their Royal Patron, His Majesty King Edward, on his recovery from illness, and on the interesting event of the Coronation, and that a reply, thanking the Society, had been received through the Home Secretary.

Before proceeding to the business of the Meeting, the President stated that he had received numerous letters from various friends who were unable to be present with them on the occasion of this the opening meeting of their Session. Among these he might refer especially to a letter from the Vice-President of the International Statistical Institute, M. Levasseur, much regretting his inability to come over from Paris to be present, but expressing the hope that he might yet be able to attend one of their meetings before the present session closed. Other letters of regret had come from the President of the Board of Agriculture, the Registrar-General for England, the Earl of Mansfield, and several other gentlemen.

The President then presented the Society's Guy Medal in silver to Mr. Reginald H. Hooker, M.A., for his paper on "The Suspension of the Berlin Produce Exchange and its Effect on Corn Prices." He observed that Mr. Hooker was well known to every member of the Society as a former Assistant Secretary, and especially to himself as an active and intelligent member of the staff of the Board of Agriculture. It must be a source of great satisfaction to them all that one of the younger members should have so distinguished himself.

Mr. R. H. Hooker, in thanking the President and Council for the honour awarded him, said that his paper was the outcome of material prepared by Professor Flux and himself for a report on the wider subject of "Futures" generally to the British Association. Had Professor Flux remained in England, this paper would no doubt have been published under their joint authorship; but as he had gone to Canada, and there was not time to send him the manuscript, and as the paper also contained a considerable amount of new matter, he had thought it might not be quite fair to make Professor Flux responsible for statements he had not seen. At the same time he had some misgivings whether he was not depriving Professor Flux of a part of any credit which the paper might bring; and these misgivings were considerably increased by the evidence he had just received, that the credit due to Professor Flux outweighed the defects of the paper. He was therefore glad to have the opportunity of explaining that half the medal should rightly belong to Professor Flux.

The PRESIDENT then delivered his inaugural address, and at its conclusion—

Sir ALFRED E. BATEMAN, K.C.M.G., in proposing a vote of thanks to the President, said they had all heard with the greatest pleasure this most able and interesting address. Major Craigie had endeared himself to so many people, that possibly the large audience gathered that evening was not attracted altogether by the love of statistics. He had, however, justified their attendance; his survey had been so excellent and wide, and at the same time it had entered fully into the needs and the growth of the Empire. It contained, as he had said, suggestions which would ripen and would probably encourage the production of other papers in the course of the next few years, which would deal at length with the ideas Major Craigie had put forward. Though he remembered the rule which forbade criticism of a presidential address, he must say that there was one point in which he thoroughly agreed with the President, namely, in his deprecation of the great stress laid on the monthly returns of the trade of the country. The occurrence of a gale or of a Bank Holiday might cause an appreciable decrease in the month's exports, and occasion forebodings in the minds of some observers, but, as Major Craigie had said, there was the unseen trade which we were doing with each other, which was many times more than the foreign trade, and of which they had not and could not have any accurate statistical idea. The President had called attention to one of the best social barometers, the state of comfort in which they were living as shown by the house accommodation of the people. There was still a great deal to be done in all our towns, and no doubt things were still very bad in some places; but, nevertheless, there had been a vast improvement in the term under review.

Sir ROBERT GIFFEN, K.C.B., in seconding the motion, said he should like, as past President of many years standing, to express his concurrence with what Major Craigie had said, that the duties of a President were not confined to the delivery of the inaugural address. It was the privilege and the duty of the President to see that excellent papers were procured, and generally to stimulate the interest of the public in their proceedings. He believed that in Major Craigie they had one of the best possible Presidents for that purpose. They could judge of his work in reading papers, not merely by what he had read that night, but by what they had heard from him on former occasions, and he had no doubt this paper would be a landmark both as reviewing the compilation and progress of statistics during the last seventy years and as a preparation for the new era upon which they had entered. He should like also to add a word in commendation of what Major Craigie had said about the excellent reports of the Inland Revenue Department, from which he had quoted so largely. Many years ago complaints were made that the Inland Revenue Department had information in its possession which was not communicated expeditiously to the public. Sometimes returns were moved for in Parliament, and sometimes a man like Mr. Porter (who established the office which Sir Alfred Bateman now held) was able to secure, by personal acquaintance with the officers of the department, information which he was able to put before the public. Now, however, they had in these periodical reports an immense amount of excellent information, well digested, and of this great use could be made, as Major Craigie had shown them that evening.

The resolution was carried unanimously.

The PRESIDENT, in acknowledging the vote of thanks, said the object of his address would be achieved if it were found that some of the various points which he had touched upon might suggest subjects for useful papers by Fellows of the Society in the future.

ENGLISH RAILWAY STATISTICS. *By* W. M. ACWORTH, M.A.

[Read before the Royal Statistical Society, 16th December, 1902.
Major P. G. CRAIGIE, C.B., President, in the Chair.]

FIFTEEN years ago Sir Juland Danvers, who had borne a principal part in introducing into India the reforms for which he pleaded in England, read before this Society a paper on "Defects in "English Railway Statistics." He concluded a powerful argument in favour of the compilation and publication in this country of statistics of ton and passenger mileage, such as are given in all other civilised countries, by urging that "power should be given "to the Board of Trade to call upon the Railway Companies of "this country to render such statistical returns as may be considered desirable in the public interests." Sir Juland's paper was read on 20th December, 1887. On the 10th of the following August the Railway and Canal Traffic Act, 1888, enacted by section 32 (1) that "the returns required of a railway company under section 9 of the Railway Regulation Act, 1871, "shall include such statements as the Board of Trade may from "time to time prescribe, and the forms referred to in that "section"—which are much the same as the forms familiar to us in the half-yearly reports which were prescribed by statute in 1868, and have remained practically unaltered since then—"may from "time to time be altered by the Board of Trade in such manner "as they may think expedient for giving effect to this section." Unfortunately the Board of Trade have not hitherto, except in small details, used the powers so entrusted to them, and our English railway returns remain to this day in all their archaic simplicity, a monument to the wisdom of our ancestors and the ancestor worship of their descendants.

Not that the Board of Trade itself is unconscious of the imperfection of these returns. At least as long ago at 1884 Sir Henry Calcraft and Sir Robert Giffen (then Assistant Secretaries for the Railway and Statistical Departments respectively) regretted, as Sir Juland notices, that "it is impossible to show what is the "receipt per ton per mile." Their successors have gone on lamenting the absence of this information ever since. But a government department can hardly be expected to act without public opinion behind it, and public opinion, till very recently, cared nothing for such abstractions as statistics. The shareholders were satisfied with their dividends. The traders preferred to endeavour to reduce rates by the simple methods of statutory compulsion, with results that certainly cannot be shown to have been successful by statistical methods. At length there seems a prospect of a change for the better. The man in the street is beginning to wonder whether the great goddess Rule-of-Thumb is a true divinity after all, whether it would really be dangerous to allow scientific methods to escape from the walls of Oxford and Cambridge and range at large among business people. Moreover, no one is satisfied with the present condition of railway affairs. Shareholders think—and, having regard to their recent dividends, may be excused for thinking—that the rates they are charging are too low. The traders think—and, having regard to what their rivals are paying in other countries, may be excused for thinking—that the rates they are paying are too high. And, finally, one go-ahead railway company, the North Eastern, has set to work to ascertain and publish, for the first time since English railways abandoned the keeping of ton-mile statistics for the special use of Dr. Lardner in the early fifties, what the rates actually are, and under what actual conditions of average length of haul and average weight of consignment these rates are charged.

We shall not, I think, be too sanguine if we expect that before long the more progressive companies will follow the lead of the North Eastern in this particular, and then, after an interval, Parliament and the Board of Trade will compel the laggarts to fall into line. The defect to which Sir Juland Danvers called special attention is practically on the high road to be remedied. But no one who has ever compared the exhaustive statistics published in every leading country of the world, with the jejune tables of our own half-yearly reports and Board of Trade returns, will be content that reform should stop at this point. The time has, I venture to say, come when the Board of Trade should intimate to the railway companies its intention of revising completely the statutory forms of 1868 and 1871, and should, after consultation with the Railway Association or the Railway Clearing House, nominate a departmental committee to advise the Board as to the shape and scope of the new returns and reports to be adopted in their stead.[1]

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[1] The American Association of Railroad Accounting Officers is in constant communication with Professor Adams, the distinguished statistician to the Interstate Commerce Commission, and for some years maintained a special standing committee for this purpose; and year by year American railway reports are improving in fulness, in arrangement, and, which is almost more important, in uniformity. The instructions as to filling in the various tables in the returns issued by the Commission to the several companies form a bulky pamphlet, and set out in minute detail the category to which each item of income or expenditure, as to which doubt could possibly arise, is to be assigned. See also Mr. Chapman's note in the Miscellanea.—ED.

One word at the outset. Such accounts must be annual, not half-yearly. The publication of final accounts half-yearly—for which Parliament, of course, is responsible, not the companies—not only causes the companies much unnecessary labour and expense, but makes statistical comparisons between consecutive periods more than twice as difficult and less than half as effective. The Board of Trade returns are now all, or nearly all, annual, and so should be the reports of the individual companies. The dividend for the first half of the financial year should be, as it is in ordinary trading companies, an interim dividend only, paid on the authority of the Board of Directors.

The Board of Trade publishes at present no less than eleven different series of reports and documents relating to railways. The list is as follows:—

Reports and Returns relating to Railways, prepared for Parliament by the Board of Trade.

	Issued.
(1.) Railway, &c., Bills. Report upon all Railway, &c., Bills and Provisional Orders of the Session	Annually
(2.) Railway Accidents. General Report	Annually
(3.) Railway Accidents. Returns of	Quarterly
(4.) Railway Servants' Hours of Labour. Report of Proceedings under Railway Regulation Act, 1893	Annually
(5.) Railways. (Capital, Traffic, &c.) Returns	Annually
(6.) Railway Share and Loan Capital, &c. General Report	Annually
(7.) Railways. (Continuous Brakes.) Returns	Half-yearly
(8.) Light Railways Act, 1896. Report under Sect. 15 (5) of proceedings of the Board of Trade, and of the Light Railway Commissioners	Annually
(9.) Railway and Canal Traffic Act, 1888. Report of proceedings under Section 31 (the so-called "conciliation" section)	From time to time
(10.) Railway Companies Powers Act, 1864. Report on applications (if any) under	From time to time
(11.) Railways Construction Facilities Act, 1864. Report on applications (if any) under	From time to time

To this formidable list may be added the Annual Report of the Railway and Canal Commissioners, which deals mainly with matters also dealt with in documents issued by the Board of Trade. The collection of all these miscellaneous and independent publications into a single statistical volume—a course for which Parliamentary sanction would have to be obtained—would be in line with the practice adopted in other countries, and would not only be a great convenience, but would also afford an opportunity for re-casting or even abolishing certain returns, for instance that relating to brakes, which are practically in a large measure obsolete.

But to come to the two important documents in the above list, Nos. 5 and 6. The full title of the first of these is "Railway "Returns for England and Wales, Scotland and Ireland" [I have never yet had the good fortune to come across the returns either for Man or the Channel Islands. Presumably they go to the Privy Council Office] "for the year , with Summary Tables "for United Kingdom from 1850 to ." No. 6 is entitled "General Report to the Board of Trade in regard to the Share "and Loan Capital, the Traffic in Passengers and Goods, and the "Working Expenditure and Net Profits from Railway Working "of the Railway Companies of the United Kingdom for the "year ." This is a report half letterpress and half tables, commenting on the facts set out in the Returns. It is signed jointly by the heads of the Railway and Statistical Departments of the Board, and addressed to the Secretary.

Before discussing the contents of and *lacunæ* in these two volumes, which evidently can only give such information as the returns of the individual companies on which they are based contain, a word will be in place on the general question as to what accounts and statistics railway companies ought to publish. Clearly of the publication *en bloc* of the vast mass of accounts and statistics kept by a railway company in the course of its ordinary business, there can be no question. A great railway company must record its current affairs in thousands of volumes. And in addition to its regular records, it is constantly conducting special inquiries in reference to particular portions of its undertaking. Considerations of mere bulk must decide in many cases. Then, further, the shareholders and the public have only to do with the system as a whole. Statistics of the traffic of individual stations, records of the comparative efficiency of co-ordinate district organisations, and so forth, clearly cannot go beyond the board room. Again, daily and weekly and monthly returns must be compiled into annual or at least semi-annual returns, before they are published. Finally, no company can be asked to publish information which might help its rivals to abstract its business.[2] It will hardly be denied that, provided the above-mentioned considerations are kept in view, the shareholders in any company are entitled to receive such accounts and statistics as are necessary to enable them to understand clearly the physical and financial condition of their property. As for the rights of the public at large to such information, it is hardly worth while to argue the matter, because, in the first place, publication to the 20,000 or 30,000 shareholders of a great company, is practically publication to the world at large, and, secondly, because the point has been decided by the statutory obligation on the companies already referred to.

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[2] I cannot think, however, that there is as much in this point as is commonly supposed. If the fiercely competitive railways of America can publish, as they do, week by week returns of the tonnage which each of them carries from Chicago and St. Louis to the sea-board, it can hardly be that annual summaries would reveal here any important trade secrets.

But statistics of a single undertaking for a single year tell us but little. For an adequate appreciation of the position of a company we need to compare it with itself in other years, and with its more or less similarly circumstanced neighbours in the same year. In other words, the form of accounts and statistics should be most carefully and deliberately settled, in order that, though additions and improvements may subsequently be introduced, no such radical changes may need to be made as would break their continuity over a series of years. And further, each company must fill up its schedules on the same basis. It is well known that this is far from having been the case in this country hitherto. The Board of Trade Report for the current year, for example, gives one instance affecting entries amounting to about 1,000,000*l.* per annum.

It is impossible, however, to ignore the fact that there is among many of the men who have the actual management of English railways—men certainly not the least progressive and enlightened of their profession—a strong prejudice against the publication of any figures beyond those which they already give, and to which they have presumably grown reconciled by time. "Why," say they, "should we give any more information? It will only be "used against us; we shall make a rod for our own backs." With respect, I cannot think their argument sound. Honest criticism will be better when based on facts instead of surmises. Malevolent misrepresentations can be better answered by statistical facts than by benevolent counter guesses. Let me give one instance. Critics both abroad and in this country have assumed for a generation past that English passenger fares were the highest in Europe, averaging about 1*d.* per mile. Actual figures for one line for one month have recently proved the average to be three-fifths of this amount. If this latter figure be typical, it would not be too much to say that, having regard to the service given, English passenger fares, instead of being the dearest, are about the cheapest in Europe. So with goods rates. Every trader is bred in the belief that English goods rates are extortionate. For my own part I make no doubt that the publication of precise figures as to average rate and length of haul would show that the rates charged in England for

English weights of consignment, carried English distances, under English conditions, are lower than would be charged for similar traffic carried similar distances under similar conditions in any other important country.

Even assuming for the sake of argument that it is in the interest of railway A to publish nothing, it is vitally in its interests that railway B and railway C should give full information as to their operations. A manager may know from his own figures that his own organisation is improving year by year in economy and efficiency. That it is improving as much as it can and as fast as it can, he can only know by observation of what his neighbours are doing. In the United States the volume of goods carried has increased in seven years 81·6 per cent. It has been handled with an increase of only 6·3 per cent. in the train mileage. No one who has lived in the atmosphere which surrounds American railway officials will, I think, doubt that precise statistical figures, enabling accurate comparison to be made between one company and another, have been the main cause in producing this marvellous result.

Judging, then, our English railway statistics by the criteria laid down above, let us see how far, on the one hand, the information they give is of practical value, and, on the other hand, how far other information is absent which might advantageously be present.

The half-yearly Reports and Accounts under the Act of 1868 are, as I have already indicated, different from the Annual Returns under the Act of 1871, but the differences between them are not very great, nor are they, as a rule, of much importance, and a discussion of these differences would be long and tedious, so I take the half-yearly Reports and Accounts as being most readily accessible and familiar to all of us. Tables 1 to 4 relate to capital, and are as follows:—

____________RAILWAY. HALF YEAR ENDING________________18 .

[No. 1.] *Statement of Capital authorised and created by the Company.*

Acts of Parliament, or Certificates of the Board of Trade.	Capital Authorised.			Capital Created or Sanctioned.			Balance.		
	Stock and Shares.	Loans.	Total.	Stock and Shares.	Loans.	Total.	Stock and Shares.	Loans.	Total.
	£	£	£	£	£	£	£	£	£
1. 2. 3. 4. 5. &c. [*Except where capital powers are comprised in a Consolidation Act, each Act or Certificate authorising capital to be stated here separately in order of date*]									
Total									

[No. 2.] *Statement of Stock and Share Capital created, showing the Proportion received.*

Description.	Amount Created.	Amount Received.	Calls in Arrear.	Amount Uncalled.	Amount Unissued.
	£	£	£	£	£
[*State each class of stock or shares in order of date of creation, showing the premium or discount, if any, at which it was issued, the preferential or fixed dividends, if any, to which it is entitled, and any other conditions attached to it*]					
Total					

[No. 3.] *Capital Raised by Loans and Debenture Stock.*

	Raised by Loans.									Raised by Issue of Debenture Stocks.			Total Raised by Loans and by Debenture Stocks.
	At per Cent.	At per Cent.	At per Cent.	At per Cent.	At per Cent.	At per Cent.	At per Cent.	At per Cent.	Total Loans.	At per Cent.	At per Cent.	Total Debenture Stocks.	
	£	£	£	£	£	£	£	£	£	£	£	£	£ s. d.
Existing at													
Ditto at													
Increase Decrease													

Total amount authorised to be raised by loans and debenture stocks in respect of capital created, as per Statement No. 1	
Total amount raised by loans and by debenture stock as above	
Balance being available borrowing powers at 18	

Dr. [No. 4.] *Receipts and Expenditure on Capital Account.* *Cr.*

	Amount Expended to	Amount Expended during Half Year.	Total.		Amount Received to	Amount Received during Half Year.	Total.
	£ s. d.	£ s. d.	£ s. d.		£ s. d.	£ s. d.	£ s. d.
To expenditure:				By receipts:			
On lines open for traffic (No. 5)				Shares and stock, per Account No. 2			
On lines in course of construction (No. 5)				Loans, per Account No. 3			
Working stock (No. 5)				Debenture stock, per Account No. 3			
Subscriptions to other railways (No. 5)				Sundries (in detail)			
Docks, steamboats, and other special items (No. 5)							
To balance							

Table No. 1, it will seen, will run to very considerable length in the case of a company which comes to Parliament, as all the great companies do, every few years for fresh capital powers. Yet it gives the shareholders little useful information. It might interest them to know that Parliament in, say, 1902 sanctioned an expenditure of 500,000*l.* on new line A, 300,000*l.* on new line B, and 200,000*l.* on general improvements over their system. But to be told that a million was authorised by the South Northern (General Powers) Act, 1902, can help them little.

Table No. 2 tends rather to bewilder than to help the plain man. Reading the statutory instruction that premiums and discounts are to be shown, and looking at the first two columns, one would expect that the first of them would give the nominal capital of the undertaking, and the second the actual cash received in exchange for the shares. But the fact is quite otherwise. Where all the authorised capital is issued and paid up, "created" and "received" mean the same thing. The North Eastern, for example, shows its ordinary stock "North "Eastern consols as, 'created' 29,536,615*l.* 10*s.*," "received "'29,536,615;'" though elsewhere in the report capital is credited with "premiums received on stock and shares" amounting to over 5 million £. The Cambrian, on the other hand, was notoriously built "for paper," and the ordinary shares were practically a bonus to the people who built the line out of the proceeds of the sale of the debentures. Yet Form No. 2 of the Cambrian report shows the Company to have created stock to the amount of 2,664,757*l.*, and to have received the whole of this sum, less 159,281*l.*, 10*s.* which is set down as the "amount unissued." Were the Cambrian to issue this amount to morrow at its present market price of about 3*l.* per 100*l.* nominal value, the next half-yearly report would presumably show 159,281*l.* 10*s.* "as an amount received." Form 3 needs no special comment.

Form 4 is much more important. It is really a statement of "assets and liabilities." The "receipts" are not cash receipts but merely capital liabilities. The "expenditure" is not cash spent but merely the price at which the road and its equipment—to use the American phrase—stand in the Company's books; in other words, the cost in stock and debentures of so much of the "lines open for traffic," "rolling stock," and other subsidiary items as has been charged to capital and not paid for out of current income. Presumably when this form was drawn up in 1868, it was intended that the credit side should show under "amount received" not nominal value of stock issued, but actual cash received, *i.e.*, face value of stock plus premiums or minus discounts, as the case may have been. Another criticism is practical rather than financial. "To expenditure on lines and works open for "traffic, 60,950,744*l.* 10*s.* 9*d.*;" this is the information given in one line to the North Eastern shareholders. One would readily barter the scrupulosity of that 10*s.* 9*d.* for a little more information as to what the lines and works are on which 61 millions sterling have been spent. What does the report give us? Just this much:—

	Miles Constructed.		Miles Maintained.
Owned by company	1,627½	Four or more lines	50½
Partly owned	15½	Three lines	8½
Leased, rented, or worked	20	Double line	1,092
		Single "	512
	1,663		1,663

Not much, surely, to tell us where 61 millions of money have gone. It is true that each half-year the details of capital expenditure are given for that half-year, but the half-year ended, they are swept up into the vast miscellaneous heap described above. In the first place where are the lines? The reports and returns of every other country give, as a matter of course, one or more maps, some of them admirable specimens of lithographic work, distinguishing the lines of different systems, or the parts of the same system, in a dozen different colours. An American report would put a little more flesh on to the skeleton exhibited above. Here is a specimen:—

Southern Pacific Company.

No. 1.—*Mileage of Railroads, Ferries, River and Ocean Lines.*

Name of Company.	Main Track.	Second Track.	Sidings.
Carson and Colorado Railway (narrow gauge)—			
Mound House, Nevada, to Keeler, Cal.	293·62	—	—
Junction to Candelaria, Nev.	6·00	—	—
	299·62	—	22·25
Central Pacific Railway—			
Oakland local lines, viz.—			
Oakland Pier to East Oakland	4·84	4·834	—
Alameda local lines, viz.—			
Oakland Pier to Melrose	8·31	5·595	—
Mastick Station to Alameda Wharf	1·25	—	—
East Oakland to Fernside	1·98	—	—
Oakland to Niles	26·39	1·494	—
San Jose, Cal., to near Ogden, Utah	863·12	—	—
Ogden, Union Station to Utah central crossing	0·11	—	—
Roseville to Oregon State line	296·58	—	—
Lathrop to Goshen	146·08	—	—
San Francisco to Oakland (ferry 3·69 miles)	—	—	—
" Sacramento (river line 125 miles)	—	—	—
Marysville steamboat line (river line 190 miles)	—	—	—
	1,348·66	11·923	—

No. 1.—*Mileage of Railroads, Ferries, River and Ocean Lines—Contd.*

Name of Company.	Main Track.	Second Track.	Sidings.
Leased—			
From Union Pacific Railway, 5 miles, west of Ogden	5·00	—	—
From Southern Pacific Railway of Cal.—			
Brighton to Sacramento	5·64	—	—
	10·64	—	—
	1,359·30	11·923	393·69
Direct Navigation Company (Texas)—			
Houston to Galveston (river line 75 miles)	—	—	—
Galveston, Harrisburg, and San Antonio Railway (Texas)—			
Houston to east bank Rio Grande, El Paso	834·57	—	—
Spofford to Eagle Pass	35·05	—	—
Harwood to Gonzales	12·30	—	—
Smith's Junction to La Grange	28·50	—	—
Stella to Harrisburg	7·74	—	—
	918·16	—	161·99

And so on for several pages. Then comes for the entire system the following:—

Recapitulation.

	Main Track.	Second Track.	Sidings.	Ferries.	River and Ocean Lines.
Proprietary companies—					
Lines owned	7,812·851	93·410	1,760·94	10·69	3,565
„ leased	43·197	3·515	—	—	—
Total	7,856·048	96·925	1,760·94	10·69	3,565
Non-proprietary lines	350·697	—	23·47	—	—
Total 30th June, 1900	8,206·745	96·925	1,784·41	10·69	3,565
„ 1899	7,417·224	96·495	1,588·39	10·69	3,565
Increase	789·521	0·430	196·02	—	—

Let me here call attention to one small point. The American report shows mileage of sidings. English reports and returns ignore sidings altogether. Yet they are not without importance, both as showing where the capital of a company has gone, and still more in comparing one line with another. An instance will prove this. The Board of Trade returns five years ago, when I had occasion to look into the matter, showed the Lancashire and Yorkshire and the Midland Great Western of Ireland to be lines practically of the same length, with, respectively, 530¼ and 538 miles. In fact, the Lancashire and Yorkshire owned and maintained 1,811½ miles of "track," made up of 2½ miles of running line single, 476¾ double, and 32 quadruple, with 708½ miles of sidings. For the Midland Great Western the figures were: running line, 377 miles single, 161 double; sidings, 80 miles; a total of 779 miles of track, or, roughly, two-fifths of the Lancashire and Yorkshire total.[3]

To save time and space, I refrain from reproducing or commenting on No. 5, "details of capital expenditure for the half-" year," and No. 7, "estimated further expenditure on capital " account."

We have seen how much information our reports give as to what the property is. Here is all the information given as to the way in which it is maintained :—

London and South Western Railway, June, 1902.

[No. 12.] A. *Maintenance of Way, Works, &c.*

	£	s.	d.	£	s.	d.	June, 1901. £
Salaries, office expenses, and general superintendence	—			7,449	1	9	7,871
Maintenance and renewal of permanent way, viz. :—							
Wages	72,129	8	8				74,847
Materials	71,453	14	4				74,747
Engine power	1,408	2	-				1,644
				144,991	5	-	151,238
Repairs of roads, bridges, signals, and works	—			45,383	18	7	43,126
Repairs of stations and buildings	—			34,364	6	-	31,723
				232,188	11	4	233,958

	June, 1902.		June, 1901.	
Miles maintained—	M.	Ch.	M.	Ch.
Seven lines	1	30	-	38
Six „	2	35	3	27
Five „	1	16	-	62
Four „	29	79	16	11
Three „	15	62	16	70
Two „	583	62	587	7
Single „	264	19	261	4
	898	63	885	59

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[3] Five years later the Board of Trade Returns show the Lancashire and Yorkshire to have added only 30 miles of line; but the miles of "track" have, I am privately informed, increased from 1,811½ to 2,049.

And here are the corresponding figures from an American railway report—figures given, be it observed, not for the line as a whole, but for each division of the system separately:—

Pennsylvania Railroad Division.

Expenses in Detail.

Accounts.	1901.	Comparison with 1900.	
		Increase.	Decrease.
	$	$	$
Maintenance of Ways and Structures.			
Engineering and superintendence ...	181,924·88	12,837·68	—
Roadway, repairs of	712,297·58	189,483·87	—
Ballast	210,671·72	—	21,866·82
Rail fastenings	239,239·76	—	6,958·06
Frogs and switches	289,090·30	47,574·24	—
Interlocking plants and signals, repairs of	292,263·91	46,167·68	—
Roadway tools, repairs of....................	81,904·81	16,603·10	—
Track repairing	1,621,289·28	95,302·70	—
Rails	641,367·83	—	54,028·63
Cross-ties	901,023·82	—	5,123·64
Bridges and culverts, repairs of	337,301·61	—	25,251·86
Fences, road crossings, and signs, repairs of	53,053·27	968·18	—
Overhead crossings	53,692·93	—	55,580·86
Stations, repairs of, and furniture for	427,225·96	77,316·83	—
Engine-houses and shops, repairs of	413,750·71	34,027·41	—
Fuel and water stations, repairs of....	230,567·19	—	6,443·59
Dwelling, power, signal, tool, and watch houses, repairs of	126,858·43	32,513·71	—
General office, repairs and furniture for	71,704·48	—	27,441·50
Docks, dredging and cleaning............	21,025·09	8,306·91	—
Wharves and landings, repairs of	45,668·13	—	76,468·44
Telegraph, repairs of	119,332·68	—	15,978·35
Stationery and printing	16,617·42	3,859·49	—
Insurance	14,211·98	504·27	—
Incidentals..	3,524·66	1,039·44	—
Total	7,105,608·43	271,363·76	—

Then after the expenditure in detail has been given, there is added a table showing the amount of new material put into the road during the year under the two main heads of rails and sleepers, as follows:—

Steel Rails and Ties used for Renewals.

	Rails.	Cross-Ties.
	Tons.	
Pennsylvania railroad division	40,114	1,319,997
United railroads of New Jersey division	10,467	358,140
Philadelphia and Erie railroad division	8,305	290,004
Buffalo and Allegheny Valley division	7,879	319,615
Philadelphia, Wilmington and Baltimore Railroad Company	7,595	407,139
Northern Central Railway Company	6,338	204,310
West Jersey and Seashore Railroad Company	1,005	189,047
Cumberland Valley Railroad Company	1,128	70,516
Pennsylvania Company	14,680	660,140
Pittsburgh, Cincinnati, Chicago and St. Louis Railway Company	27,148	761,681
Grand Rapids and Indiana Railway Company	3,438	239,793
Total	128,097	4,820,382

It may be added that the American figures, full as they are in comparison with ours, are meagreness itself by the side of those given for the great Continental systems. The tables for these are much too voluminous to be reproduced here. Let me just give indications of what they contain in France or Germany. The French tables give (Tableau 2), for each department of the country separately, the length of line, both open and under construction, the name of the company operating it, and, if there is more than one line of the company in the department, a detailed enumeration of them all, with their respective lengths. A supplementary table (No. 2 *bis*) gives length of line, divided into first and second class railways and tramroads, partly or wholly open for traffic, per square myriametre and per 10,000 inhabitants in each department. Then Table 5 gives separately for each separate section of each railway system information of which the following is a sample:—

Western (of France).

		Double Line.		Single Line.					
		Sectional Length.	Total Length.	With Land, Formation, and Works for a Single Line.	With Land for Two Lines, Formation and Works for a Single Line.	With Land and Works for Two Lines, Formation for Single Line.	With Formation and Works for Two Lines.	Total.	Grand Total.
		Kilometres.	Kilometres.	Kilometres.	Kilometres.	Kilometres.	Kilometres.	Kilometres.	Kilometres.
16. From Rennes to Brest	Rennes to Caulnes........	46·254	199·306	—	—	—	49·873	49·873	249·179
	Caulnes to Lamballe....	34·708							
	Lamballe to St. Brieuc	20·297							
	St. Brieuc to Guingamp	30·205							
	Guingamp to Kerhuon	60·399							
	Kerhuon to Brest	7·443							

Minute as this is, the German statistics, issued for the whole Empire by the Reichseisenbahnamt (Imperial Railway Office) are vastly more detailed. Tracing through the volume the information as to the physical condition and maintenance of a single piece of road, say the Wittenberge-Dömitz-Lüneburg section, we obtain the following information. It belongs to the Prussian Directorate of Altona; its length is 102·35 kilometres; it is worked as a first-class line; it is single line throughout; 43·740 kilometres (42·74 per cent. of the total length) are level; 58·610 kilometres (57·26 per cent. of total length) have gradients, but none of them worse than 1 in 200. Then, as for curves, 76·309 kilometres are straight (74·56 per cent.), 26·041 kilometres (25·44 per cent.) are on curves. The radii of the curves on 21·955 kilometres are not less than 1,000 metres; there are 3,754 metres on curves with radii between 500 and 1,000 metres, and 332 metres with radii between 300 and 500 metres. But outside station limits there is no curve of less radius than 700 metres.

These statistics, it is to be observed, apply to a sub-division of a sub-division of the Prussian State railways. The rest of the Imperial statistics as to physical condition and maintenance do not recognise sub-divisions. But for the Prussian State and other government railways as a whole, as well as for each of the still remaining private railway undertakings, a vast mass of further information is given. Table 5, for instance, shows that the Dortmund-Gronau-Enschedes Company's line is 96·89 kilometres long, of which 90·60 are outside and 6·29 inside station limits. Cross-over roads amount to 2·50 kilometres; there are 14 siding connections beyond station limits; there are in all 153½[4] highway level crossings, of which 62 have barriers closed by hand, 89 have barriers closed by mechanical means, 2 more are closed by a wire connection from a distance; the half crossing is kept locked. There are 15 road crossings over or under the line, 2 of them arched bridges, the rest girders. This same table goes on to give particulars of culverts, bridges, viaducts, and tunnels. The next table (No. 6) deals with the permanent way: how the rails are laid, whether they are steel or iron, their weight per metre, whether the sleepers are iron, wooden, or stone blocks—of which Bavaria still possesses 70 kilometres—the number of sleepers laid per kilometre, all are particularised. Table 7 gives a full statement of the telegraph, block, signal, and interlocking apparatus in use. Table 8 enumerates, under thirty-nine different heads, the various buildings erected on the railway property, from station halls to coal tips and weighbridges. Table 9 deals with maintenance and renewals, and shows how many kilometres have been renewed, and precisely what materials have been used for the purpose, down to the number of yards of ballast. Table 10 gives the cost of maintenance under twenty-five different heads; not only gross cost, but cost per kilometre maintained, and cost per 1,000 kilometres of engine mileage over the road.

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[4] I cannot explain this "half;" but there are other instances in the return, so it is clearly not a misprint. Perhaps the portion of the line on which it occurs belongs to two companies jointly, and each is credited with one-half.

I have said enough to show that outside England expenditure on the road, whether out of capital or out of revenue, is both itemised and localised in a way quite unknown here. Now of course the railway manager will smile at the idea of any such particulars being given in this country. For my own part I am not competent to exprsss an opinion which, if any, of them are superfluous. But this much is clear: a good deal of the information, in some not very dissimilar form, must exist at present in the railway offices; indeed, where it concerns the construction, as distinct from maintenance, of the lines, in the archives of the Board of Trade itself. Further, the present figures are obviously insufficient to enable shareholders to know what their property is, how it is being maintained, and where the money for this latter purpose is coming from.

I have dealt in such detail with capital and maintenance of road and buildings, that I may dismiss more briefly the capital and maintenance accounts of rolling stock. Broadly the same statement applies. The English figures are jejune in the extreme; Continental and American statistics are manifold more full. Capital Account, No. 4, of an English railway enters the cost of rolling stock in a single line. This is supplemented by No. 6, Return of Working Stock and Abstracts, B "Locomotive Power," and C "Repairs and Renewals of Carriages and Waggons." Let us put them all togther, and see how far the information they give is sufficient. Here are the figures from the report of the Great North of Scotland for the last half-year:—

[No. 4.] *To Expenditure.*

	£	*s.*	*d.*
On working stock	872,477	18	1

[No. 6.] *Return of Working Stock, as at* 31*st July*, 1902.

	Engines.			Carriages.									
	Tender.	Tank.	Total.	Saloon.	1st Class.	3rd Class.	Composite.	Passenger Luggage Vans.	Post-Office Vans.	Horse Boxes.	Carriage Trucks.	Fish Trucks.	Total.
Stock at 31st January, 1902	97	18	115	2	74	287	60	71	2	20	13	200	729
Stock at 31st July, 1902	97	18	115	2	74	287	60	72	2	20	13	200	730
Increase during half-year	—	—	—	—	—	—	—	1	—	—	—	—	1
Decrease during half-year	—	—	—	—	—	—	—	—	—	—	—	—	—

	Waggons.											Gross Total.
	Goods Brake Vans.	Brake Waggons.	Cattle Waggons.	Ballast Waggons.	Covered Goods Waggons.	Open Box Waggons.	Low-sided Waggons.	Furniture Vans.	Meat Vans.	Timber Waggons.	Total.	
Stock at 31st January, 1902	65	8	265	114	212	2,651	150	2	65	24	3,556	4,400
Stock at 31st July, 1902	65	8	265	114	212	2,651	159	2	65	24	3,556	4,401
Increase during half-year	—	—	—	—	—	—	—	—	—	—	—	1
Decrease during half-year	—	—	—	—	—	—	—	—	—	—	—	—

Abstracts.

Half-Year Ending 31st July, 1901.				Half-Year Ending 31st July, 1902.					
£	s.	d.		£	s.	d.	£	s.	d.
			B. *Locomotive Power.*						
698	17	8	Salaries, office expenses, and superintendence	—			688	1	3
			Running expenses—						
9,023	3	8	Wages of engine drivers, firemen, &c.	9,091	17	-			
23,076	15	5	Coke, coal, and firewood	20,401	16	2			
750	12	6	Water	705	8	-			
1,481	9	8	Oil, tallow, and other stores	1,227	5	10			
34,332	1	3					31,426	7	-
			Repairs and renewals—						
4,628	3	4	Wages for repairs of engines and tenders, &c.	3,909	13	6			
3,541	19	3	Materials for repairs of engines and tenders, &c.	3,178	19	2			
8,170	2	7					7,088	12	8
43,201	1	6					39,203	-	11
			C. *Repairs and Renewals of Carriages and Waggons.*						
			Carriages—						
203	10	1	Salaries, office expenses, and superintendence	217	13	-			
1,441	8	9	Wages for repairs	1,764	19	8			
1,513	1	9	Materials for repairs	1,751	5	6			
3,158	-	7					3,733	18	2
			Wagons—						
188	12	2	Salaries, office expenses, and superintendence	170	11	8			
1,335	18	2	Wages for repairs	1,383	5	11			
2,794	6	6	Materials for repairs	2,450	2	-			
4,318	16	10					4,003	19	7
7,476	17	5					7,737	17	9

What, one naturally asks, are these engines? are they on the average ten years old or thirty? are they small shunting engines weighing 20 tons, and worth, when new, 1,200*l.*, or modern express engines, weighing 60 tons, and worth 3,000*l.*? Then, the carriages; are they 4-wheeled boxes, that cost 300*l.* a-piece forty years ago, or modern 8 or 12-wheelers, worth, perhaps, 2,000*l.* a-piece? Repairs and renewals, what do they consist in? Patching up to keep worn out stock still moving on its last legs, or replacement of stock out of date, though still perhaps quite sound, by modern vehicles four times as costly? English railway practice reports, or at least has reported in the past, under the headings given above, financial extremes as widely divergent as these two imagined instances. A return on the German pattern showing the age and weight of every locomotive, and what percentage were in working condition on a given day, might have saved the shareholders of a company not long since from suddenly seeing the bulk of their normal dividend written off as contribution to a "rolling stock renewal suspense account."

I subjoin a portion of the information given under this head by an American company. With these tables before them, railway shareholders have only themselves to thank if their directors, over a series of years, allow their property to run down. The first table, it will be observed, shows that the company has increased its locomotive power about 12 per cent. during the year, its carriage capacity about 3 per cent., and yet that no change whatever has been made to capital on this account. The second table, with its large percentages of engines "in service needing repairs," is striking proof how the rush of traffic in America has overtaxed the resources even of the greatest and richest companies. Of course it is bad economy to work engines needing repairs. But where the alternative is not to carry the traffic at all, it is the lesser of two evils. Still the company did something to cope with its difficulties, as it put a new engine into service every three days throughout the whole twelvemonth.

Equipment Owned by the Pennsylvania Railroad Company, 31st December, 1901.

	Available for Service, 31st December, 1900.	Acquired as Additions to Equipment during 1901.	Destroyed or Transferred to other Classes during 1901.	Built to Fill Vacancies or Transferred from other Classes during 1901.	Total Increase or Decrease.	Available for Service, 31st December, 1901.	Capacity.		Valuation as Carried on General Ledger	
							1901.	1900.	31st December, 1901.	31st December, 1900.
Locomotives.							Tractive Power. lbs.		$	$
Passenger	470	39	24	24	+ 39	509	8,049,500	6,997,126	....	....
Freight	1,184	88	76	68	+ 80	1,264	32,914,348	28,073,415	....	....
Shifting	235	....	12	20	− 8	243	4,473,060	4,255,470	....	....
Total	1,889	127	112	112	+ 127	2,016	45,436,908	39,326,011	15,199,570·35	15,199,570·35
Passenger car equipment.							Passengers. Seating capacity			
Passenger	1,072	21	58	58	+ 21	1,093	67,310	65,990	....	....
„ 2nd class	76	....	9	....	− 9	67				
Parlor	6	....	....	....	....	6	201	201	....	....
Dining	14	6	....	....	+ 6	20	654	474	....	....
Passenger baggage	206	3	29	37	+ 11	217	8,422	7,742	....	....
„ „ mail	12	....	....	1	+ 1	13	306	262	....	....
Baggage mail	56	....	2	6	+ 4	60	....	....	....	....
„	103	....	4	4	....	103	....	....	....	....
Express	13	....	2	....	− 2	11	....	....	....	....
Baggage express	151	17	9	2	+ 10	161	....	....	....	....
Refrigerator express	11	4	....	1	+ 5	16	....	....	....	....
Postal letter	35	1	3	3	+ 1	36	....	....	....	....
„ paper	11	1	2	2	+ 1	12	....	....	....	....
„ storage	9	....	....	4	+ 4	13	....	....	....	....
Dynamometer	1	....	....	....	....	1	....	....	....	....
Passenger (electric motor), B. and Mt. H. T. R. R.	3	....	....	....	....	3	150	150	....	....
Total	1,779	53	118	118	+ 53	1,832	77,043	74,819	6,398,583·65	6,398,583·65

Equipment Owned by the Pennsylvania Railroad Company, 31st December, 1901—Contd.

	Available for Service, 31st December, 1900.	Acquired as Additions to Equipment during 1901.	Destroyed or Transferred to other Classes during 1901.	Built to Fill Vacancies or Transferred from other Classes during 1901.	Total Increase or Decrease.	Available for Service, 31st December, 1901.	Capacity.		Valuation as Carried on General Ledger.	
							1901.	1900.	31st December, 1901.	31st December, 1900.
Freight car equipment.							Tons.	Tons.	$	$
Box	11,925	....	742	548	−194	11,731	356,600	349,495	....	....
Refrigerator	752	....	11	11	....	752	18,525	18,450	....	....
Stock	1,929	....	70	70	....	1,929	48,305	47,935	....	....
Gondolas	32,607	....	1,189	1,200	+ 11	32,618	914,645	882,855	....	....
Four-wheel cabin	890	16	131	131	+ 16	906	....	....	....	....
Box (Empire line)	3,995	....	146	341	+195	4,190	124,815	115,350	....	....
Refrigerator (Empire line)	60	....	....	....	....	60	1,500	1,500	....	....
Rack (Empire line)	1	....	1	....	− 1	....	....	15	....	....
Tank cars (Green line)	625	....	11	....	− 11	614	bbls. 56,660	bbls. 57,600	....	....
Total	52,784	16	2,301	2,301	+ 16	52,800	tons 1,464,440 bbls. 56,660	tons 1,415,600 bbls. 57,600	18,966,890·91	18,966,890·91
Maintenance of way equipment.										
Cabin	55	....	15	....	− 15	40	....	....	....	....
Tool and block	118	....	21	10	− 11	107	....	....	....	....
Snow ploughs	3	....	....	....	....	3	....	....	....	....
„ sweepers	1	....	....	....	....	1	....	....	....	....
Derrick	76	....	2	....	− 2	74	....	....	....	....
Stone and wood trucks, and flat cars	1,123	....	11	11	....	1,123	....	....	....	....
Test weight	....	1	....	3	+ 4	4	....	....	....	....
Hand cars	786	23	46	45	+ 22	808	....	....	....	....
„ trucks	1,069	19	22	22	+ 19	1,088	....	....	....	....
Total	3,231	43	117	91	+ 17	3,248	....	....	177,425·55	177,425·55

Equipment Owned by the Pennsylvania Railroad Company, 31st December, 1901—Contd.

	Available for Service, 31st December, 1900.	Acquired as Additions to Equipment during 1901.	Destroyed or Transferred to other Classes during 1901.	Built to Fill Vacancies or Transferred from other Classes during 1901.	Total Increase or Decrease.	Available for Service, 31st December, 1901.	Capacity.		Valuation as Carried on General Ledger.	
							1901.	1900.	31st December, 1901.	31st December, 1900.
Floating equipment.									$	$
Steam ferry-boats	14	....	1	1	....	14	....	....	....	....
Tug boats	32	....	1	1	....	32	....	....	....	....
Steam lighters	3	....	....	....	....	3	....	....	....	....
Barges	86	5	....	....	+ 5	91	....	....	....	....
Flat scows	30	....	....	....	....	30	....	....	....	....
Dump "	4	....	....	....	....	4	....	....	....	....
Car floats	66	2	2	2	+ 2	68	....	....	....	....
Canal barges	25	....	3	....	− 3	22	....	....	....	....
Dredgers	3	....	....	....	....	3	....	....	....	....
Total	263	7	7	4	+ 4	267	....	....	2,236,353·25	2,236,353·25
Grand total	....	....	....	....	....	....	....	....	42,978,823·71	42,978,823·71
Tools and machinery in shops	....	....	....	....	....	....	....	....	1,618,218·88	1,618,218·88
Total valuation of equipment as per general ledger	....	....	....	....	....	....	....	....	44,597,042·59	44,597,042·59

Note.—This statement embraces only the equipment absolutely owned by the company, and therefore does *not* include 33,521 freight cars, with a capacity of 1,287,680 tons, leased under various car trusts and under the equipment trust gold loan.

Equipment Leased under Car Trusts, 31st December, 1901.

	Date at which Cars will become Property of P.R.R.	Number.	Capacity.
Pennsylvania rolling stock—			Tons.
Series "A" and "B" box	1st April, 1902	3,161	95,430
Series "C" and "D" box	1st July, 1902	1,339	40,700
,, "C" and "D" hopper gondola	1st ,, '02	2,000	60,550
Series "C" and "D" long gondola	1st ,, '02	54	2,160
,, "C" and "D" steel ,,	1st ,, '02	115	5,750
Series "E," "F," and "G" steel gondola	1st October, 1908	1,000	50,000
Series "E," "F," and "G" box	1st ,, '08	2,000	80,000
,, "E," "F," and "G" long gondola	1st ,, '08	1,946	77,840
Series "H," "I," and "K" box	1st April, 1909	2,000	80,000
,, "H," "I," and "K" hopper gondola	1st ,, '09	1,910	76,400
Pennsylvania car trust—	•		
Series "A," "B," and "C" steel gondola	1st November, 1909	500	25,000
Series "A," "B," and "C" long gondola	1st ,, '09	1,284	51,360
Series "A," "B," and "C" box	1st ,, '09	430	17,200
Series "F," "G," "H," "I," and "K" box	1st February, 1910	4,000	160,000
Series "K" steel gondola	1st February, 1910	500	25,000
,, "K" long ,,	1st ,, '10	325	13,000
Pennsylvania equipment trust—			
Series "A" box	1st December, 1910	153	6,120
,, "B" ,,	1st ,, '10	410	16,400
,, "B" long gondola	1st June, 1911	1,000	40,000
,, "C" steel ,,	1st ,, '11	505	25,250
,, "D" and "E" steel gondola	1st ,, '11	1,495	74,750
,, "E" flat	1st ,, '11	500	20,000
,, "E" and "F" box	1st ,, '11	437	17,480
	1st ,, '11		
* Series "F" and "G" box cars	1st ,, '11	695	34,750
* Series "H" and "I" steel gondolas		625	31,250
		28,384	1,126,390

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* Certificates covering these cars will not be issued until 1902, although cars are in service.

Comparison of the Condition of the Motive Power Equipment.

Condition.	P. R. R. Division.		U. R. R. of N. J. Division.		P. and E R. R. Division.	
	31st December, 1901.	31st December, 1900.	31st December, 1901.	31st December, 1900.	31st December, 1901.	31st December, 1900.
	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.
In service in good working order	$81\frac{3}{10}$	79	$79\frac{9}{10}$	$78\frac{7}{10}$	$78\frac{2}{10}$	$78\frac{7}{10}$
„ requiring repairs	$11\frac{7}{10}$	$13\frac{4}{10}$	$7\frac{4}{10}$	$8\frac{1}{10}$	12	$12\frac{1}{10}$
In shop under repairs	$3\frac{8}{10}$	$4\frac{9}{10}$	$9\frac{8}{10}$	$10\frac{5}{10}$	$3\frac{6}{10}$	$4\frac{3}{10}$
„ awaiting repairs	1	$2\frac{2}{10}$	—	—	$1\frac{3}{10}$	$0\frac{5}{10}$
Leased	$2\frac{2}{10}$	$0\frac{5}{10}$	$2\frac{1}{10}$	$0\frac{3}{10}$	$3\frac{1}{10}$	—
Condemned	—	—	$0\frac{8}{10}$	$2\frac{4}{10}$	—	—
Loaned temporarily to P. R. R. Div.	—	—	—	—	$1\frac{8}{10}$	$3\frac{9}{10}$
„ U. R. R. of N. J. Division	—	—	—	—	—	$0\frac{5}{10}$

Condition.	B. and A. V. Division (P. R. R. Assigned Locomotives).		Total.		B. and A. V. Division.*	
	31st December, 1901.	31st December, 1900.	31st December, 1901.	31st December, 1900.	31st December, 1901.	31st December, 1900.
	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.
In service in good working order	50	—	$80\frac{3}{10}$	$78\frac{9}{10}$	$69\frac{4}{10}$	$87\frac{4}{10}$
„ requiring repairs	—	—	$10\frac{8}{10}$	$12\frac{2}{10}$	$10\frac{9}{10}$	$3\frac{3}{10}$
In shop under repairs........................	$8\frac{3}{10}$	—	5	6	$8\frac{4}{10}$	$7\frac{9}{10}$
„ awaiting repairs	—	—	$0\frac{9}{10}$	$1\frac{5}{10}$	$5\frac{4}{10}$	$1\frac{4}{10}$
Leased	—	—	$2\frac{2}{10}$	$0\frac{4}{10}$	—	—
Condemned	—	—	$0\frac{1}{10}$	$0\frac{5}{10}$	$1\frac{7}{10}$	—
Loaned temporarily to P. R. R. Div.	$41\frac{7}{10}$	—	$0\frac{7}{10}$	$0\frac{4}{10}$	—	—
„ U. R. R. of N. J. Division	—	—	—	$0\frac{1}{10}$	$4\frac{2}{10}$	—

* Includes Pennsylvania Railroad assigned locomotives.

Mileage of Locomotives.

		Passenger.	Freight.	Work.	Totals.
Pennsylvania Railroad Division	1901	10,621,445	30,218,606	2,588,331	43,428,382
	1900	10,104,981	30,008,424	2,179,814	42,293,219
Increase		516,464	210,182	408,517	1,135,163
United Railroads of New Jersey Division	1901	6,799,999	6,788,972	601,266	14,190,237
	1900	6,623,859	6,384,788	487,045	13,495,692
Increase		176,140	404,184	114,221	694,545
Philadelphia and Erie Railroad Division	1901	1,661,887	5,031,253	247,107	6,940,247
	1900	1,273,305	4,425,309	166,207	5,864,821
Increase		388,582	605,944	80,900	1,075,426
Total	1901	19,083,331	42,038,831	3,436,704	64,558,866
	1900	18,002,145	40,818,521	2,833,066	61,653,732
Increase		1,081,186	1,220,310	603,638	2,905,134
Buffalo and Allegheny Valley Division—					
1901		2,577,716	4,551,410	305,885	7,435,011
1st August to 31st December, 1900		869,168	1,835,144	73,678	2,777,990

Cost per 100 *Miles Run of Locomotives for Repairs, Fuel, Stores, and Roundhousemen.*

		Repairs.	Fuel.	Stores.	Round-housemen.	Totals.
		$	$	$	$	$
Pennsylvania Railroad Division	1901	6·87	7·86	0·25	1·52	16·50
	1900	6·17	7·22	0·25	1·51	15·15
Increase		0·70	0·64	—	0·01	1·35
United Railroads of New Jersey Division	1901	5·04	10·75	0·24	1·49	17·52
	1900	4·98	10·29	0·24	1·50	17·01
Increase		0·06	0·46	—	—	0·51
Decrease		—	—	—	0·01	—
Philadelphia and Erie Railroad Division	1901	4·59	8·12	0·19	1·20	14·10
	1900	5·13	7·33	0·18	1·27	13·91
Increase		—	0·79	0·01	—	0·19
Decrease		0·54	—	—	0·07	—
Total	1901	6·22	8·53	0·24	1·48	16·47
	1900	5·81	7·91	0·24	1·48	15·44
Increase		0·41	0·62	—	—	1·03
Buffalo and Allegheny Valley Division—						
1901		5·34	7·37	0·30	1·29	14·30
1st August to 31st December, 1900		4·75	7·04	0·33	1·23	13·35

Passenger Equipment Mileage.

All lines operated directly.

	P. R. R. Division.	U. R. R. of N. J. Division.	P. and E. Division.	Total.	Comparison with 1900.		B. and A. V. Division.	Total all Lines Operated Directly.
					Increase.	Decrease.		
Passenger, coach	21,041,352	14,266,577	3,253,330	38,561,259	2,275,428	—	5,253,269	43,814,528
„ combined	4,061,146	3,055,692	636,924	7,753,762	140,178	—	682,506	8,436,268
„ 2nd class	697,353	234,944	17,822	950,119	—	6,685	362,485	1,312,604
Dining	521,566	546,683	80,580	1,148,829	137,974	—	70,606	1,219,435
Parlor	1,261	78,660	574	80,495	23,389	—	—	80,495
Burlington and Mount Holly Traction Electric	—	73,022	—	73,022	—	16,865	—	73,022
Street (W. J. and S. R. R.)	—	535	—	535	227	—	—	535
Pullman	10,083,129	6,361,983	948,489	17,393,601	1,139,568	—	1,197,982	18,591,583
Postal	3,545,119	1,209,830	29,450	4,784,399	443,860	—	29	4,784,428
„ storage	725,826	174,020	—	899,846	138,003	—	—	899,846
Baggage express	12,856,068	4,244,848	1,726,046	18,826,962	1,414,792	—	2,429,607	21,256,569
Total	53,532,820	30,246,794	6,693,215	90,472,829	5,689,869	—	9,996,484	100,469,313

Note.—Philadelphia and Erie Railroad Division figures for year 1900 include mileage made on low grade division from 1st August to 31st December inclusive.

So far we have been dealing with accounts which, however important, are after all only preliminary to the real business for which a railway company exists, namely, the transport of persons and things.[5] And if our half-yearly reports have been found jejune so far, their information has been lavish compared to that furnished under the most important head of all. Here is practically everything that the shareholders are told:—

North Eastern Railway Company, June, 1902.

D. *Traffic Expenses.*

	£	s.	d.	£
Salaries and wages	634,049	7	5	623,942
Dock expenses—shipping coal, dock master, &c.	54,618	8	9	58,727
Fuel, lighting, water, and general stores	77,510	10	10	75,412
Clothing	9,886	15	6	11,413
Printing, stationery, and tickets	22,376	17	6	21,413
Horses, harness, vans, provendor, &c.	5,829	13	6	5,308
Wagon covers, ropes, &c.	13,700	7	4	9,602
Joint station expenses	15,138	1	3	12,895
Miscellaneous „	4,346	19	–	4,129
	837,457	1	1	822,841

E. *General Charges.*

	£	s.	d.	£
Directors	4,250	–	–	4,250
Auditors	300	–	–	300
Salaries—secretary, general manager, accountant, and clerks	31,113	3	2	31,049
Office, travelling, and incidental expenses	5,301	7	1	6,483
Advertising	1,860	–	2	1,609
Fire insurance	3,750	–	–	3,750
Electric telegraph expenses	13,633	4	3	13,780
Railway clearing house expenses	11,531	6	–	11,522
Contribution to superannuation funds	8,506	16	10	8,164
	80,245	17	6	80,907

F. *Stationary Engines and Self-Acting Inclines, &c.**

	£	s.	d.	£
Wages	12,415	15	2	11,071
Ropes	548	6	8	64
Materials	4,920	18	9	2,421
Horse hire	1,358	4	1	1,103
	19,243	4	8	14,664

* This Abstract F is, I believe, peculiar to the North Eastern, which carries large quantities of coal down inclines, many of which must have been in existence before Tyneside had ever heard of George Stephenson and his audacious innovation.

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[5] There is one exception to this statement. Abstract B given above includes, it will be seen, "running expenses," that is, the money spent on working the locomotives, wages of drivers and firemen, and coal burnt on the line. Clearly these items are in their wrong place mixed up with maintenance and repairs: they belong to what the Americans call "conducting transportation" (*exploitation, Betrieb*), and ought to be included under "traffic expenses." The explanation of their anomalous position is to be found in the historical organisation of English railways.

Dr. [No. 9.] *Revenue Account.* Cr.

Expenditure.		£	s.	d.	30th June, 1902. £	s.	d.	30th June, 1901. £
To maintenance of way, works, and stations	See Abstract A				431,931	1	8	400,153
Locomotive power	" B				839,034	5	8	898,362
Carriage and wagon repairs	" C				430,651	13	2	423,433
Traffic expenses	" D				837,457	1	1	822,841
General charges	" E				80,245	17	6	80,907
Stationary engines, inclines, &c.	" F				19,243	4	8	14,664
Law charges					5,231	4	2	5,109
Parliamentary expenses					3,500	–	–	3,500
Compensation (accidents and losses)—								
Personal injury		14,204	4	1				
Damage to and loss of goods, &c.		13,594	1	3				
					27,798	5	4	24,978
Rates and taxes					176,856	10	–	168,936
Government duty					7,330	16	3	7,183
					2,859,279	19	6	2,850,066
Balance—carried to net revenue account No. 10					1,481,566	18	11	1,462,203
					4,340,846	18	5	4,312,269

Receipts.	Number of Passengers. 1902.	Number of Passengers. 1901.	£	s.	d.	30th June, 1902. £	s.	d.	30th June, 1901. £
By passenger traffic—									
1st class ...	720,641	708,652	92,656	9	–				89,690
3rd " ...	25,690,828	26,995,201	897,080	1	1				910,109
	26,411,469	27,703,853	989,736	10	1				999,799
Periodical tickets ...	44,788	42,895	98,810	12	10				95,357
Parcels, horses, carriages, and dogs ...			203,240	1	4				190,499
Mails			30,425	13	–				30,473
						1,322,212	17	3	1,316,128
Merchandise traffic			1,511,323	16	1				1,476,422
Less collection and delivery...			87,495	14	–				82,201
						1,423,828	2	1	1,394,221
Live stock traffic			—			50,153	19	1	48,507
Mineral traffic			—			1,407,957	4	3	1,422,955
Miscellaneous receipts, viz.—									
Rents and receipts on real property ...			62,863	0	3				58,155
Transfer fees			595	15	–				297
Dock revenue			73,265	11	3				79,024
Mileage and demurrage of waggons, &c. ...			*Dr.* 3,029	10	9				*Dr.* 7,018
						136,694	15	9	130,458
						4,340,846	18	5	4,312,269

[No. 15.] ***Statement of Train Mileage.***

	Half-Year ending 30th June, 1902.	Half-Year ending 30th June, 1901.
Passenger trains	7,172,666	7,155,845
Goods and mineral trains	7,468,914	8,094,496
Total	14,641,580	15,250,341

The omissions in the Revenue Account—or rather the fact that traffic, and then only passenger traffic, is merely regarded as an incident of revenue to be casually hinted at in a side note—are surely most curious. The shareholder may assume that his railway carried some goods traffic, as it earnt a million and a half sterling by carrying it. But what that traffic was, and what quantity was carried, he has no notion, except so far as the mention of "mineral trains" in the "Train Mileage Statement" may lead him to suspect that a certain quantity of coal was one of the items. Even where certain particulars are given, they are carefully calculated to conceal facts. "Periodical tickets, 44,748," include an unknown number of workmen's weekly tickets at 1*s.* or thereabouts, and also an unknown number of first class tickets available for twelve months over large sections of the system, and costing perhaps 30*l.* or 40*l.* As for Abstracts D and E, it really hardly seems worth while splitting up E into nine items, when one single item in D, which is not regarded as needing subdivision, is eight times as large as the whole nine put together. Moreover the items in D are mainly not General Expenses at all. Travelling, insurance, advertising, and superannuation should be split up among the different departments. "Railway Clearing House" is wholly "telegraph," chiefly a traffic charge.

Here are the corresponding abstracts from an American report—once more, be it observed, not for the entire system of the company, but for a single division. It will be observed that, while general expenses have shrunk to eight entries, traffic expenses have expanded from 9 to 47 :—

Pennsylvania Railroad Company.
United Railroads of New Jersey Division.
Expenses in Detail—*Contd.*

Accounts.	1901.	Comparison with 1900.	
		Increase.	Decrease.
Conducting Transportation.	$	$	$
Superintendence	62,813·39	824·18	—
Clerks, attendants, and office expenses	176,828·63	12,076·38	—
Enginemen and firemen	916,207·07	51,197·36	—
Roundhousemen	211,023·12	8,552·40	—
Locomotives, fuel for	1,461,086·41	122,846·82	—
Fuel stations, expenses of	65,634·59	—	1,679·74
Locomotives, water supply for	85,782·34	9,805·60	—
„ stores for	32,769·26	1,589·90	—
„ other supplies for	23,639·88	1,543·20	—
Conductors, baggagemen, and brakemen	767,557·27	47,954·60	—
Cars, heating and lighting	63,458·16	16,184·46	—
„ cleaning	95,162·43	15,946·47	—
„ lubricating	26,863·37	3,212·82	—
Other train supplies and expenses	65,206·84	—	295·94
Yardmen	839,799·68	47,171·22	—
Switch-tenders and signalmen	110,736·60	3,645·12	—
Watchmen	244,656·08	1,358·21	—
Telegraph expenses	323,129·58	14,469·48	—
Station agents and clerks	932,198·94	26,539·70	—
„ labor	1,735,828·92	56,593·18	—
Stations, heating and lighting	139,703·69	18,880·09	—
Signals and interlocking plants, expenses of operation and supplies	55,782·80	4,876·68	—
Stations, other supplies and expenses of	132,639·35	14,083·80	—
Switching charges, balance	1,795·25	144·75	—
Car mileage, balance	173,852·29	14,613·76	—
Loss and damage	55,286·89	1,604·98	—
Injuries to persons	16,898·40	2,391·31	—
Wrecks, clearing	24,479·30	3,438·59	—
Barges, car-floats, and canal-boats, charters	166,765·06	51,538·91	—
Barges, car-floats, and canal-boats, incidentals	39,633·82	—	828·15
Barges, car-floats, and canal-boats, superintendence and manning	154,818·57	—	9,083·45
Elevation and 'longshore labor	196,730·07	2,159·45	—
Steamboats and tug-boats, charters	54,846·80	—	322·08
Steamboats and tug-boats, fuel for	364,022·84	45,998·27	—
Steamboats and tug-boats, incidentals	75,989·12	872·68	—
Steamboats and tug-boats, superintendence and manning	465,995·20	7,604·25	—
Advertising	109,395·07	8,684·43	—

United Railroads on New Jersey Division—Contd.

Expenses in Detail—*Contd.*

Accounts.	1901.	Comparison with 1900.	
		Increase.	Decrease.
	$	$	$
Foreign agencies	116,505·70	—	424 80
Stock yards and elevators	30,973·74	12,817·64	—
Rents for tracks, yards, and terminals	85,678·57	14,317·91	—
Rents of buildings and other property	364,250·86	216·35	—
Stationery and printing	151,546·74	380·01	—
Motormen and conductors	3,538·47	—	525·93
Power-houses, expenses of operation	5,568·49	—	1,113·78
Yard and street lighting	8,779·41	—	442·99
Insurance	91,681·89	580·25	—
Incidentals	29,735·66	—	8,364·02
Total	11,357,276·11	623,634·33	—
General Expenses.			
Clerks	206,304·41	13,948·00	—
Heat and light	123·70	—	9·75
Office expenses and supplies	5,292·13	—	177·86
Relief department, expenses of	31,923·51	14,435·88	—
Law expenses	26,929·61	4,309·72	—
Stationery and printing, general office	30,920·35	5,580·48	—
Advertising	206·79	125·26	—
Incidentals	3,884·43	3,414·19	—
Total	305,584·93	41,625·92	—

This return, it will be observed, divides salaries and wages under about a dozen heads, and separates train staff from station staff, goods yards staff and signal staff, all of whom are lumped together with us. The French returns classify the staff in twenty-four categories; giving for each company the number in each category, but do not show the wages paid to them. Our Board of Trade does at irregular intervals publish a census of railway employees in different classes, but has never, I think, endeavoured to correlate the numbers with the wages paid, which latter figures are annually dealt with in its Report.

The Returns under the Act of 1871, it should be mentioned, do give one or two figures that the half-yearly reports omit, of which the important ones are the tonnage carried of goods and minerals, each separately.[6] But even so, they give no figures showing what the company really does, and what it charges for it. All we know is the company obtains, say, 5*s.* for each ton of merchandise it carries. But a ton of what, carried how far? A ton of bricks carried 10 miles, or a ton of furniture carried a hundred? We can only guess. The question "how far" would of course be answered by the production of ton-mile statistics, as to which I will only add one word to what I have said already. For the Board of Trade to require these to be produced would not be to sin against the canon I have proposed, viz., that statistics should not be specially produced for publication, but should be published after being produced for practical purposes, because ton-mile statistics—not annual, but weekly, or at least monthly—are found to be of great practical use in all other countries. The question, what is the composition of the traffic carried, is answered in very convenient form by the following table, which has been elaborated by the Statistician of the Interstate Commerce Commission, with the help of the American Association of Railroad Accounting Officers, and which now appears in all American railway reports. I cannot believe that there would be any difficulty in producing a similar table here:—

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[6] They also give a figure which perhaps would be just as well omitted, "Percentage proportion of expenditure to total receipts," which the Americans more briefly call "working ratio," and the French "*coefficient d'exploitation.*" I say it might be better omitted, because the working ratio is often used as though it were a scale by which efficiency and economy of operation might be judged. This it can only be when all the other factors are constant, which they never are. Take an extreme instance. Imagine a railway with an average receipt of 1*d.* per ton-mile worked at 50 per cent. The following year Parliament, in its wisdom, cuts down the statutory maxima, and the average receipts fall to ⅔*d.* per ton-mile in consequence. The working ratio will now be 75 per cent., and its increase will be quoted by the quidnuncs who air their opinions in the press or at the half-yearly meetings, as a proof of the ineptitude of the management of the company.

*Classification of Freight Traffic.**
All lines operated directly.

	P. R. R. Division.	U. R. R. of N. J. Division, Exclnding D. and R. Canal.	P. and E. R. R. Division.	Total.	Comparison with 1900. Increase or Decrease.	B. and A. V. Division.	Aggregate Lines East of Pittsburgh and Erie Operated Directly.
Products of Agriculture.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Grain	1,576,812	448,788	400,145	2,425,745	− 298,132	140,623	2,566,368
Flour	537,223	257,970	270,849	1,066,042	+ 18,023	97,483	1,163,525
Other mill products	350,588	131,737	121,189	603,514	+ 7,003	69,146	672,660
Hay	179,048	101,959	57,483	338,490	− 39,356	35,573	374,063
Tobacco	58,124	30,773	11,070	99,967	− 16,989	2,242	102,209
Cotton	53,417	64,689	6,388	124,494	− 15,900	888	125,382
Fruits and vegetables	375,232	349,314	152,165	876,711	− 69,501	149,868	1,026,579
Other articles	168,727	111,752	148,984	429,463	− 30,261	41,986	471,449
Products of Animals.							
Live stock	444,548	168,804	44,448	657,800	− 54,597	19,419	677,219
Dressed meats	141,765	78,811	15,602	236,178	− 59,551	7,394	243,572
Other packing-house products	147,949	56,583	21,632	226,164	− 86,618	8,996	235,160
Poultry, game, and fish	65,097	52,031	16,806	133,934	− 13,277	2,636	136,570
Wool	16,680	14,732	1,581	32,993	− 13,562	998	33,991
Hides and leather	100,980	103,082	85,181	289,243	+ 16,029	51,382	340,625
Other articles	261,920	286,769	73,689	622,378	− 93,304	63,597	685,975

Note.—As the lines embraced by the Buffalo and Allegheny Valley Division were operated by the Pennsylvania Railroad Company for five months only in 1900, no comparisons with that year can be shown for this division or for any totals in which its operations are included.

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* It will be observed that these figures are tons only, not ton-miles. The Interstate Commerce Commission lately proposed to call on the companies to give the ton-mileage of each item. The companies protested vehemently, and as it seems to me with entire justice, that the cost would be enormous and quite incommensurate with the advantages to be gained. The excellent Indian statistics give both tons carried and gross receipts for their principal articles of traffic, but not ton-miles. The New South Wales returns, on the other hand, do give ton-miles, but only enumerate about half-a-dozen principal articles.

Classification of Freight Traffic—Contd.

All lines operated directly.

	P. R. R. Division.	U. R. R. of N. J. Division, Excluding D. and R. Canal.	P. and E. R. R. Division.	Total.	Comparison with 1900. Increase or Decrease.	B. and A. V. Division.	Aggregate Lines East of Pittsburgh and Erie Operated Directly.
Products of Mines.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Anthracite coal	5,567,436	4,458,617	5,657,824	15,683,877	+ 1,729,026	565,699	16,249,576
Bituminous "	21,450,987	6,814,019	5,747,201	34,012,207	− 1,926,455	3,422,490	37,434,697
Coke	9,983,055	186,938	677,188	10,847,181	+ 1,508,557	594,448	11,441,629
Ores	2,872,523	403,856	954,758	4,231,137	+ 589,739	628,676	4,859,813
Stone, sand, and like articles	5,235,627	984,112	468,602	6,688,341	+ 1,173,160	698,466	7,386,807
Other articles	280,887	126,094	82,117	489,098	− 181,187	135,043	624,141
Products of Forests.							
Lumber	2,095,070	995,903	1,423,349	4,514,322	+ 747,595	975,397	5,489,719
Other articles	284,792	108,828	483,232	876,852	− 217,547	398,506	1,275,358
Manufactures.							
Petroleum and other oils	440,211	274,460	246,590	961,261	+ 22,768	561,922	1,523,183
Sugar	253,831	109,028	82,617	445,476	− 17,326	21,462	466,938
Naval stores	19,316	7,534	5,077	31,927	+ 324	3,895	35,822
Iron—pig and bloom	1,670,747	320,629	283,770	2,275,146	− 291,645	451,386	2,726,532
" and steel rails	742,544	140,718	74,611	957,873	− 86,777	50,366	1,008,239
Castings and machinery	1,847,298	738,699	410,553	2,996,550	+ 490,870	282,019	3,278,569
Bar and sheet metal	3,084,361	668,198	299,850	4,052,409	+ 759,714	961,567	5,013,976
Cement, brick, and lime	2,002,248	530,031	310,826	2,843,105	+ 555,184	417,918	3,261,023
Agricultural implements	35,154	11,637	10,661	57,452	+ 2,555	3,456	60,908
Wagons, carriages, tools, &c.	44,244	26,757	16,445	87,446	+ 25,728	32,807	120,253
Wines, liquors, and beers	147,124	88,790	43,619	279,533	− 20,060	28,233	307,766
Household goods and furniture	70,022	31,091	18,395	119,508	+ 814	13,368	132,876
Other articles	2,794,364	2,016,166	1,084,303	5,924,833	+ 381,264	573,952	6,498,785
Merchandise	307,274	292,337	51,919	651,530	− 55,006	99,019	750,549
Miscellaneous	1,508,475	720,279	260,342	2,489,096	+ 1,047,685	407,738	2,896,834
Total	67,215,700	22,342,515	20,121,061	109,679,276	+ 5,488,987	12,020,064	121,699,340

If, in addition to a table similar to that last printed, we were furnished with statistics of tons and ton-miles of merchandise and minerals, with the number of passengers in the different classes, with their mileage, and the revenue from each category worked out at so much per mile, the shareholders would probably have about as much information as they require to show them the work their company does and the money it receives for doing it. But there is another point. It is highly desirable, if possible, to localise the traffic. The Great Eastern, for example, carries, not counting season ticket holders, 120 million passengers per annum. How many of these are beyond a ten-mile radius round Liverpool Street? It is practically impossible from any figures published at present to obtain even an approximate idea of the traffic and the revenue either of a suburban line, of a main trunk line, or of an agricultural branch. In France it is quite otherwise. The system of their Eastern Railway, for instance, is divided into 86 different sections. No. 1 is the main line from Paris to the German Frontier at Avricourt; No. 62 is a branch, three miles long, from St. Maurice to Bussang, and so on. For each of these 62 sections separate statistics show the tons and passengers carried, the ton and passenger mileage, the revenue from passengers and goods respectively, the working expenses, and the net receipts.[7]

Turning from traffic and the receipts therefrom to working and working expenses, it needs no discussion to show that even with the help of the additional information furnished long after date by the annual returns, shareholders have no material on which to base an intelligent criticism of the operation of their railway. We are informed that in the half-year the company ran so many million train miles, spending thereon so much, and earning therefrom so much. The company earned, therefore, say, 5*s.* per train-mile, and spent, say, 2*s.* 9*d.* And that is practically all. Comparing one half-year with another—assuming other things to be equal, which, of course, they never are—we can, of course, say that, if train-mile receipts are stationary while expenses increase, the management is extravagant; if receipts diminish while expenses remain fixed, the management is non-economical. But if train-mile receipts increase 5 per cent., while working expenses go up 10 per cent., what are we to say? It may be the result of extravagance, or it may be that wise and far-seeing management is encouraging the development of low-class traffic, which, while it leaves a profit, yet pays a profit at less than the average rate, but at the same time tends to establish on a solid foundation important industries in the district. Which explanation is right we can only guess from our own already formed conception of the character of the management. But there is no reason why we should not have facts on which to base our judgment. If we knew what the average load of a train—how many trucks or carriages—was, we should know by comparison with other comparable railways whether train-mileage was economically used. If we knew the number of engine-miles, we should know whether engine power was wasted. If we knew the percentage of empty to loaded trucks, we should know whether back loading was looked after as closely as possible. If we knew what the load of the average truck was, we should know whether space was being wasted, not only in the trucks, but in sheds, yards, and sidings all down the line. If we knew the miles run by each engine, carriage, and wagon, we should be able to tell how far full service was got out of these very costly appliances, and how far the constant demands for new rolling stock were justified. For the same reason a return in the form following would not be without value :—

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[7] I must confess to wondering what it costs to produce these very interesting figures, and whether anything except the financial partnership between the French companies and their Government would justify that expense. It is, however, to be remembered that—in theory at least—the traffic, not of each section of the railway, but in each parish, has to be ascertained in this country for rating purposes.

Number of hours per annum the locomotives are			
A. In steam	(*a.*) In motion.	B. In the shed not under steam.	C. In the repair shops.
	(*b.*) Standing still owing to delays.		
	(*c.*) Waiting for its train.		

But I need not continue to enumerate possible statistics of operation and traffic: they take many forms in different countries: it is for experts to say which are most valuable under English conditions. Here, as a specimen of those in practical use elsewhere, are the freight traffic statistics published—they are only extracts from the very much fuller statistics prepared for the use of the officers of the road—by the Pennsylvania Company, which within the last few years has recast the form of its annual report with great care :—

Freight Traffic Statistics.

All lines operated directly.

	P. R. R. Division.	U. R. R. of N. J. Division.	P. and E. R. R. Division.	Total.	Comparison with 1900. Increase or Decrease.	B. and A. V. Divisions.	Aggregate Lines East of Pittsburgh and Erie Operated Directly.
Miles of road	1,773·66	466·31	621·99	2,861·96	− 96·60	809·28	3,671·24
Freight earnings (rail)	$46,130,667·23	$13,597,334·34	$8,449,784·36	$68,177,785·93	+ $6,006,006·23	$5,722,153·23	$73,899,939·16
Per cent. of total earnings	78·39	56·52	84·17	73·36	+ 0·46	70·51	73·13
Number of tons carried	67,215,700	22,342,515	20,121,061	109,679,276	+ 5,488,987	12,020,064	121,699,340
" " 1 mile	8,721,579,078	1,297,953,799	1,732,689,806	11,752,222,683	+ 223,759,655	944,129,781	12,696,352,464
Average miles each ton was carried	129·76	58·09	86·11	107·15	− 3·50	78·55	104·33
Number of tons carried per mile of road	37,897	47,913	32,349	38,323	+ 3,106	14,853	33,149
" " 1 mile per mile of road	4,917,278	2,783,457	2,785,720	4,106,355	+ 209,708	1,166,629	3,458,328
Freight earnings per mile of road	$26,008·74	$29,159·43	$13,585·08	$23,822·06	+ $2,807·86	$7,070·67	$20,129·42
" expenses " *	$16,216·88	$22,397·51	$7,889·80	$15,414·19	+ $1,315·22	$5,283·97	$13,181·11
Net earnings from freight per mile of road *	$9,791·86	$6,761·92	$5,695·28	$8,407·87	+ 1,492·64	$1,786·70	$6,948·31
Average earnings per ton (cents)	68·6	60·9	42·0	62·2	+ 2·5	47·6	60·7
" " per mile (cents)	0·529	1·048	0·488	0·580	+ 0·041	0·606	0·582
Average cost per ton per mile (cents)*	0·330	0·805	0·283	0·375	+ 0·013	0·453	0·381
" number of tons in loaded car	21·24	20·44	20·22	21·00	+ 0·23	18·99	20·83
" train load, tons	502	442	586	505	+ 21	351	489
" number loaded cars in train	23·64	21·64	28·99	24·07	+ 0·78	18·49	23·49
" " empty "	14·38	10·68	10·20	13·38	− 0·36	10·69	13·10
Revenue freight train mileage	17,363,416	2,935,503	2,955,909	23,254,918	− 574,743	2,688,171	25,943,089
" " per mile of road	9,790	6,295	4,752	8,126	+ 72	3,322	7,067
Freight earnings per revenue freight train mile (cents)	265·7	463·2	285·9	293·2	+ 32·3	212·9	284·9
Freight expenses per revenue freight train mile (cents) †	165·7	355·8	166·0	189·7	+ 14·7	159·1	186·5

† As the lines embraced by the Buffalo and Allegheny Valley Division were operated by the Pennsylvania Railroad Company for five months only in 1900, no comparisons with that year can be shown for the figures of this division or for any totals in which its operations are included.

On it I will make only one criticism. All the statements in the table, except those to which I have put an asterisk, are based on actual facts. The statements I have marked rest on estimates which each separate statistician would make differently. No one can say positively what it costs to carry a ton of freight on a line doing also a passenger business. It is obvious that the whole of the maintenance of way and the whole of the general expenses, and a considerable portion of the expenses for locomotive power and conducting transportation, are incurred neither for freight nor passengers separately, but for the traffic of the line as a whole. It is of course possible to allocate expenses between the two branches of traffic in any ratio one pleases—on the assumption that a passenger-mile costs the same or some fixed percentage of a ton-mile; on the assumption that a freight train-mile costs the same or some fixed proportion of a passenger train-mile; or on any other assumption you please. And if the assumption be maintained unaltered year after year, it may give valuable guidance to the management of the company. But I submit that it is unscientific to publish to outside persons as statistical facts figures which, to the extent of at least 50 per cent., rest upon wholly unverifiable assumption.[8]

We have now gone through the main outlines of an English report. I ought, however, perhaps to have noted one feature peculiar to this country, the certificates of the responsible officers that the whole of the plant of the company has been maintained in proper order, and the certificate of the auditors that revenue has been debited with all expenses properly falling upon it. It is probably due in no small degree to these excellent requirements that English management has been so creditably free from the gross scandals that in former years discredited the United States, where companies suddenly turned from large dividend payers to bankrupts. Whatever view we may take on the question how far railway companies ought to meet capital expenditure out of revenue, at least our companies have not deliberately paid dividends out of capital. I may perhaps also just notice that the following additional subjects are in some countries included in the railway statistics, viz., punctuality of passenger trains, privately owned sidings connected with the railway lines, friendly society, insurance, and superannuation funds; and that the statistics are very frequently given in diagrammatic as well as tabular form.

One word in conclusion. No one is probably half as conscious as the writer of the imperfections of this paper, which naturally should have fallen to the lot of some one with an inside familiarity with railway management and finance, to which I can make no claim. But no one however experienced and accomplished could single-handed construct a proper framework for a railway report. Such a framework must be the work of a committee of experts meeting frequently, and thrashing out the question after drafts and redrafts innumerable. What I have put forward is only a group of suggestions for consideration when the question of redrafting our reports is taken up seriously; and that it will have to be taken up ere long I firmly believe. Whatever the outside public may think, I question whether any Fellow of the Royal Statistical Society will care to deny that a reform of English railway statistics is already overdue.

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[8] These figures used to be habitual in American railway reports. Most companies have of recent years, with the full approval of the Interstate Commerce Commission, ceased to publish them; but the Pennsylvania and, I believe, the New York Central and some other Eastern companies still give them.

DISCUSSION *on* MR. ACWORTH'S PAPER.

THE PRESIDENT, in inviting discussion, said the subject to which Mr. Acworth, in his most useful and timely paper, had drawn attention, was one that was of immediate interest to railway shareholders and those concerned in the administration of the vast industry which the internal transport trade of this country now represented. Despite the fulness of some of the railway returns of other countries, the question was enlisting interest and support abroad. It was discussed last year at the meeting of the International Statistical Institute, to which he was a delegate. At the instance of the Russian and French delegates, a committee had been appointed to go thoroughly into the whole of this question, from the point of view of securing more uniform and comparable statistics of railway working and finance. It was obvious that considerable reform in the direction suggested by Mr. Acworth would be needful in this country, before the necessary data would be elicited for the purposes of international comparison.

MR. G. S. GIBB would have preferred to defer his own remarks until someone had addressed the meeting who was less in sympathy than he himself was with the views of the author. He thought that the author had probably acted wisely in refraining from elaborating a new system of accounts, because at the present stage of the discussion they were not concerned in settling what were to be the heads and items of the proposed new form of accounts, but rather in discussing the desirability of having any revision at all. His own belief was that it would be found that there would not be so much objection to it as was generally anticipated. On the general question of revision he could not dissent from the main view of the paper, that the time had come when some revision of the form of railway accounts was necessary. There were several points of view from which revision should be regarded. First of all the point of view of the responsible management, the directors and managers of the railway companies; secondly, the point of view of the shareholders and proprietors; and thirdly, the point of view of intending buyers, which would to some extent be combined with that of shareholders, because it was obviously the interest of proprietors to publish such accounts as would give intending buyers sufficient information. Then there was the point of view of the customers of the railway, the passengers and the traders, and there was finally the point of view of the general public, which some people might perhaps think inadmissible. It must be conceded that the present accounts were inadequate, and did not enable anyone to form a sound judgment on the management, economy of working, or stability of the affairs of a company. The great defect of the present accounts was in the classification. Though no doubt a fairly good classification at the time it was adopted, it was now out of harmony with railway business. Re-classification and greater uniformity in debiting the various items of expenditure to various headings of accounts was necessary. On their face the accounts of the different companies looked as much alike as two peas, but when the items included under each heading were considered, it would be found that there was a considerable diversity of practice. He entirely agreed with Mr. Acworth as regarded the mistake of classifying the expenses of locomotive running with costs of manufacture or repair of rolling stock. He would, however, avoid detailed criticism, and keep to the general question of the desirability of some change. He could not conceive that any shareholder would object to receive fuller and better information than was given in the English accounts. Whether he would read it or not would be another question. He had no doubt it would really be found that the main objection in the minds of those who did object to improve the accounts was the fear of the possible abuse of the information to be given. There was no doubt legitimate ground for suspicion on the part of railway companies. Railway companies had for some years had a bad time of it. They were, perhaps, the one big industry of the country whose powers of charging what they thought necessary to earn a fair profit in conducting their business had, notwithstanding Parliamentary charters, been deliberately and forcibly cut down by Parliament. Experience of that sort of revision had naturally made railway companies hesitate about giving fuller data of their business affairs until they saw more accurately what was to be done with it. Personally he was not afraid. He believed that it would have been to the advantage of the railways if, when the revision of rates took place in 1888-92, fuller information had been at the disposal of Parliament, shareholders, customers, and the public. He did not believe that railway companies had anything to fear from the production of all the figures necessary for satisfactory accounts, arranged and classified in a proper manner. What they had to fear was the injury that might be done to their interests by ignorance. He had no doubt that, from two points of view, fuller information, accessible to the public, would be advantageous. It would be an advantage to railway managers if there were better data available for sensible criticism. Fuller knowledge would also be of advantage in removing the suspicions and improving the habits of traders. He could not doubt that the absence of good accounts had deprived railway managers of the advantage derivable from outside criticism. All professions required the breeze of outside criticism. Again, it would be of advantage in showing Parliament and the traders where railway companies were making their reasonable profits, and where they were suffering losses. Obviously the revision of railway accounts could only be taken in hand by experts. But railway experts were a very busy, and he would say a very much overworked, set of people, and had not much time to take up new subjects. He was not as a rule in favour of Government interference, but having regard to the existing powers of the Board of Trade, and the general considerations affecting this question of railway accounts, he was rather inclined to think that the Board of Trade might take some action and, in co-operation of course with railway officers, form a committee which would report on the matter, as was done when the present form of account was settled. Personally he did not see the least reason why that should not be done again, and, though he could not speak for the railway interest, he would individually co-operate most heartily with any such movement.

Sir HENRY BURDETT, K.C.B., said he thought the paper was most opportune, and if there were any doubt on the subject, he thought it would be settled by the fact that the Parliamentary return showed that, in the ten years from 1890 to 1900, 279 million £ of new capital had been added to our English railway system, whilst the increase in the roads only amounted to 1,800 miles. Anyone who had studied railway finance must realise that unless some radical changes and modifications of system were adopted, there must be a very serious fall in the values of English railway securities as an investment. Speaking from considerable experience, he said that there could be no doubt that the best American system of statistics and charges as it existed to-day might be studied with advantage by English directors and managers. He was perfectly aware that the methods adopted in handling the American and Canadian traffic, though showing a large reduction in working expenses, could not be pursued at the present time in England, but he certainly thought that the time had arrived when there should be a broad and distinct line drawn in their published accounts by every English board of directors between betterment and maintenance. It was all very well to have a high dividend on a railway stock for a certain number of years, but we had come to a time in the history of English railways when in many of these companies a radical change in the present system of apportioning profits, combined with the most careful consideration of the several items before any distribution took place, was called for in the interests of the shareholders, the public, and the efficient maintenance of our railway system. If the payment of large dividends were to continue to be the main object of the directors, there must be a serious falling off in the values of the stock of the majority of English railways. The public was beginning to realise that this continuous increase of capital, much of it for purposes the cost of which ought to a large degree to be met out of the net profits, was a suicidal system. The speaker proceeded to deprecate the addition of information to the reports on the mere suggestion of individual shareholders. This was apt to cause waste of shareholders' money in the publication of pages of figures as in the United States, which led nowhere. He agreed with the last speaker that it was possible that, under proper reservations, fuller and better information could be given in railway reports, but before any change could with advantage be made, the whole question should be considered by a committee of experts, to be called together by the Board of Trade, and representing all the interests affected. It must be remembered that when the present form in which railways issue their accounts was adopted, in 1868, things were very different from what they were that day. Thirty-four years made an enormous difference. In his judgment, if there had been a reconsideration of the form of railway accounts ten or fifteen years ago, it would have been infinitely better for everybody connected with our railways. He did not believe if such a revision had taken place, because of the improvement which would have resulted in the quality and form of railway statistics and accounts published, there would have been anything like the large capital expenditure to which he had referred, nor would the net profits have been distributed by several railways as they had been. With the aid of such statistics railway boards would have been strengthened by representations from their shareholders and expert critics. On the whole, the classes who held the best English railway stocks preferred less dividends and assured securities to larger dividends when attended with all the risks appertaining to the system which had brought several of our railways to what he might call the present *impasse* they had reached in this country. It was satisfactory to know that a few English railways of the highest rank had shown by the system they had pursued for many years, to the honour and credit of their directors and managers, that they supported the methods he had tried to suggest.

Mr. W. R. Lawson observed that they had heard this very important question stated from, three different points of view. Mr. Acworth had given them the reformer's point of view; Mr. Gibb had given them the conservative point of view; and the last speaker had given them the Stock Exchange point of view. Mr. Gibb had very rightly asked from what standpoint this subject should be discussed? He, the speaker, considered that fuller information was wanted from every standpoint; above all, from the standpoint of the railways themselves, simply as a matter of railway operation. The question was answered long ago by an American railway man—President Hill, of the Great Northern. Someone on going through his figures with him, asked him how, with all his other work, he had found time to master these figures. President Hill's reply was, "Well, if I had not mastered these figures they would have mastered me." That was the originating cause of the statistical movement on the American railways to which Mr. Acworth had referred. Ten or eleven years ago he had the good fortune to travel for a week or two with Mr. Hill, from whom he learned that his statistical methods had been practically forced on him. Without them he would have been unable to exercise proper supervision over his staff. He took out his returns, and went over the figures division after division, pointing out their different results. In respect to one division he said, "We have a first class young Irishman there, and, in spite of heavy gradients, he moves his freight cheaper and quicker than any of the others." That young Irishman was now Vice-President of one of the principal systems of America, and at least a dozen of the young men whom Mr. Hill trained on the Great Northern were in high positions on other railways. Mr. Hill was so much impressed with the results of statistical training, that he established for his own line a school of railway statistics. He had always at his elbow a "phenomenal statistician" to give him every information he wanted about any station on the road. They took young men from Yale and Harvard, and passed them through the accountant's office. In England they could not get to-day either the young men or the means of training them. It was not a question of publishing all the statistics, but of having them for use; what accounts they should publish was a very secondary matter indeed. Most of those now published were of no earthly use to any shareholder, and half of the railway returns published by the Board of Trade were simply a waste of printing. All these forms for instance showing "capital created" "capital authorised" and "capital issued" might be out of date before they left the directors' hands. He was astonished that in this discussion no railway man had taken credit for one of our few strong points, namely, the capitalisation of our railways, which was infinitely superior to the American. It was logical, intelligible, and simple, and shareholders could rely upon it. When the Americans were re-organising so many of their roads some years ago, they adopted the English form of capitalization—bonds, preference stocks, and common stocks. Though now they were getting away from that as far as they possibly could, six years ago they did pay us the compliment of recognising our superiority in that respect. But the main point was the operating statistics. Everbody interested wanted greater economy in working our railroads, and surely the first steps towards reduction of cost was the ascertaining of what the cost really was. He therefore thoroughly agreed with Mr. Acworth in his desire for reform.

Mr. J. **Russell Sowray** believed that the majority of shareholders did not care much about any figures in the reports except those showing the dividend, and that though a good deal more information in the reports was desirable, he could not go the length of desiring the issue of such bulky reports and accounts relating to English railways as appeared to be published by some other countries. The author was perhaps a little hard on the accounts of railway companies as they existed at present. Dealing with Tables 1, 2, and 3, of the capital account, Mr. Acworth appeared to contend that they should give information as to the amount of capital received in cash. But those three accounts did not profess to be cash accounts. They represented what capital had been created and what capital had been raised which was entitled to rank for dividend. No. 4 was a cash account of receipts and payments, and it would be found that it *was* an actual account of receipts and payments. A company sometimes issued stocks at a premium and sometimes at a discount, and in such an account, in order to make it balance, they would find there was a statement of the premiums received or the discounts allowed. Again, he would reply to the author's criticisms of the tables which he said showed locomotive power mixed up with repairs and renewals of carriages and wagons. Those tables were taken from the detailed accounts, and the accounts gave an entirely separate statement of what was expended for locomotive power from what was expended in repairs and renewals of carriages and wagons, and that distinguishing mark also appeared in the official returns published by the Board of Trade. He thought they were all agreed that the accounts at present published did not give everything that was necessary in order that the public or the shareholders might judge of the financial position of railway companies. Still it was well that they should have the credit for what they did give. In the statements published by the Board of Trade they gave what were called the net traffic receipts, which the public might naturally believe were the net receipts available for dividend. As far as he had been able to judge, that was not the case. The companies accounts had first of all a revenue account in which they gave all the traffic receipts and the working expenses, and the balance of this account was the net traffic receipts: then they had what was called a net revenue account, in which they brought forward the balance from the revenue account and inserted a good many items which were necessarily additions to or deductions from the net traffic receipts before a dividend could be declared.

Mr. **George Paish** said that the information contained in the existing railway reports was not only inadequate, but actually misleading, though, of course, not intentionally so, and that consequently the accounts were of little practical value either to the officers who managed the roads, to the shareholders who owned them, or to the traders and the public who brought them traffic. As evidence of his charge of inaccuracy he remarked that the gross earnings from passengers were supposed to be earnings from passengers carried by the railway; but some of the companies included passenger receipts from steamships in their railway passenger earnings. Again, the merchandise receipts, less cartage, were supposed to be receipts of the railway in respect of which train mileage had been incurred, but in some instances the freight receipts included large earnings from steamships, from canals, and from cartage. Thus the earnings either per passenger or per freight train mile would give an utterly wrong impression of the actual earnings per train mile. But even were it possible to ascertain accurately the earnings per train mile, the result would be of little value as a test of good management, as the earnings per train mile were largely governed by the length of haul and the class of traffic conveyed. If the haul were short, the terminal charges would have a greater effect upon the earnings per train mile than if the haul were longer. Again, if the class of traffic hauled paid rates relatively high, the earnings per train mile would necessarily be high too, although there may have been little effort to fill the trains or to work with economy. On the other side of the account, it was impossible to determine if due economy had been practised in the renewals and repairs of locomotives, of carriages, and of wagons. The statement of repairs and renewals contained no particulars of how much had been spent upon repairs and how much upon renewals. Thus one company might be repairing and renewing its rolling stock as thoroughly as another, but at a much lower cost. By so doing, however, it laid itself open to the charge of parsimony, because it did not waste as much as its neighbour. The question of railway statistics was, however, wider than a mere matter of accounts, it concerned the welfare of the country. The cost of transport entered largely into the cost of manufacture. In spite of the very great growth of railway traffic in the last thirty years, freight was until recently handled no more economically than it was thirty years previously. Indeed, it was handled with less economy. As an instance of possible economies, he stated that the cost of constructing a 15-ton or a 20-ton coal wagon was very much less in proportion than the cost of constructing a 10-ton wagon; in fact, his authority placed the saving in capital from the use of 20-ton wagons at 33 per cent. If they calculated the saving that would be effected by the substitution of 20-ton wagons for those in existence, they would find that it would amount to many millions. And similar economies in capital would accrue from the use of more powerful locomotives. Bearing in mind, therefore, that defective railway statistics have involved the country in enormous waste of both capital and revenue, that comprehensive information would probably lead to vast economies, and that the demand for more information was pressed for, not merely by economists and statisticians, but by shareholders, by traders, and by the press, it was evident that the moment was opportune for introducing a new system of accounts and statistics.

Mr. N. L. COHEN, after referring to the full and close thought reflected in the paper, observed that they all recognised that it was the custom of the Continental railroad companies, many of which had received assistance from national funds, or from the national credit, and of the American railroads, which also in many instances had received much State assistance in the way of land grants, to publish very much fuller information as to the capital, haulage, and income of their roads, than was usual here. The author of the paper not only believed that the compilation and publication of such figures would be useful to the companies as trading concerns—that is to say, in the interests of their shareholders—but went on to urge that the collection and publication of the suggested particulars should be made compulsory. Surely not one of those present could imagine that the General Managers, or the Directors in consultation with them, could fail to have cognisance of the ton-mileage, and of the passenger-mileage, and of local statistics bearing upon the expenditure and revenue, and upon the various constituent factors in regard to the working of the railroad? Was it conceivable that without arrangements for the record and for study of excerpts from those particulars, the working policy of the railroad, the charges and fares, could be satisfactorily and completely adjusted or supervised? But the case for the fuller publication of such statistics rested on a different footing from the case for asking whether, and to what extent, such information was collected in the archives of the railroad, and really used by the Managers and the Directors. He suggested that the plea for fuller publication was due to insufficient knowledge of the extent to which it was customary for the Board of Directors to assist the General Managers in the supervision and sustained and detailed study of the broad lines of policy of administration. He thought the public had a high regard for the energy and great ability of the railway Managers, but there was a doubt as to how far they are assisted in the study of essential factors in the economical and efficient management of a railroad by the Boards of Directors, or by special Sub-Committees of the Boards appointed from time to time to study particular issues. It was really remarkable how many Railway Directors had also pledged a very large portion of their time to public affairs, or to Constituencies as Members of the House of Commons. He would have deprecated the view that great practical beneficial results would accrue from the publication of the suggested statistics, but for the speech of Sir Henry Burdett. He thought it was unfortunate that such suggestions were not susceptible of definite contradiction or confirmation. With regard to the alleged insufficient allowance for depreciation of rolling stock, he (the speaker) believed that, at all events in the cases of two railways whose figures he had studied, there was a great deal of exaggeration. Generally, he believed, it would be found that though the method of procedure might seem perhaps a little unbusinesslike and somewhat haphazard in regard to any particular half-year, yet in regard to a group of half-years there was nothing to justify the apprehension that there had been a payment of dividends at the cost of betterment, at least in respect of inadequate provision for depreciation of rolling stock. He felt with Sir Henry Burdett that it would be more satisfactory if the exepnditure were allocated on regular principles to each half-year. Turning to another point, he remarked on the insufficient inferences drawn by shareholders from the statistics already published, and the general "slackness" of shareholders. Take for instance the figures in regard to Law and Parliamentary expenses. Year by year they saw very onerous charges imposed upon railway companies repeatedly and successively by the Houses of Lords and Commons, in obtaining parliamentary sanction for the expenditure of fresh money, sometimes only on their own stock and on their own lines, or on other matters concerning no outside rights. Again, they saw the large sums which went in compensation for damaged goods. He had never heard of any meeting of shareholders pressing on their directors, nor had he ever heard of the directors of their own initiative urging, that there should be a reasonable limit of time for such claims after the delivery of the goods. From these and other indications he was led to feeling at least great doubt that they would obtain very helpful criticism from the general body of shareholders however much the published statistics might be extended. He felt that they should rather look to an improvement in the economic management of railways by the more intimate association of directors or of sub-committees of directors with the general managers in studying the constituent factors of the income and expenditure and new features that might be suggested. The text of the reports might certainly be made fuller. That would involve no fresh expense or delays for collection of statistics; no one could deny that the text of the English reports were very bald and somewhat crude. When railway directors had taken the responsibility of inviting their shareholders to incur large expenditure on new branches and extensions or developments, it seemed reasonable that shortly after those branches had been opened, or the developments had been realised, there should be some exposition as to whether the policy of the expenditure had been justified, or, if not, what was the position in regard to it.

After remarks from Mr. R. PRICE-WILLIAMS,

The Right Hon. Lord ALLERTON, rising in response to repeated calls, said he would have preferred to have said nothing. He thought the question of accounts was more a question for experts than for directors, but he might be allowed to say what his own view as a director was. Of course, he was speaking only in his personal capacity. The reader of the paper and those who had discussed it had spoken of America as leading the way in the affording of all this information in their reports. But he believed that the Indian railways had been the real pioneers. As a shareholder in one or two Indian railways, he got with the accounts information which appeared to him as full and as complete as anything which was provided by the American railway companies. A similar remark might be made of the reports of the railways of South America. He would like to say that he did not agree with Mr. Gibb as to the desirability of inviting the co-operation of the Board of Trade. He would remind them that the form of accounts now used by the different companies was prescribed by the Board of Trade, but it was still hardly possible to compare the results of one company with another. Although all the companies filled up a return professedly on the same lines, everybody "inside" knew that there was in detail as between almost every company some slight variation. Speaking from the directors' point of view, he must admit that he sympathised with the view of having the accounts kept in a different form, but it might at least be taken that in their present form the accounts were accurate, reliable, and honest. It would, he thought, be of the greatest service to general managers to have the accounts tabulated in a different form, so as to enable them to ascertain more promptly if there was any leakage going on. If there was such a leakage, it was no use waiting for the half-yearly accounts. The general manager and the head of each department ought to have his accounts in such a form that if there was a leak taking place anywhere during one week, it should at all events be discovered before the end of the next week. Such a system might possibly lead to increased dividends. He quite agreed with the gentleman who said that the dividend figure was that for which the shareholder looked most anxiously in the accounts. He doubted whether the statistical information disclosed by a new system of accounts would be really of much advantage to the shareholders or to the public. Past experience had shown that every information which had been supplied by the railway companies had been constantly used, to the extent it could be used, against the railway companies and in attacking them. Therefore, there must be a limit even to the generosity of the directors in giving information which might be used against themselves. With all respect to the Board of Trade, he doubted if that department could assist them much. But all railways did not publish everything they were doing, and it was just possible that the movement which Mr. Acworth so zealously advocated had progressed further than he thought, and that within the railway offices of the country a very large amount of information was now in process of being obtained. In fact, they had it from Mr. Gibb that the North Eastern Railway Company had all the information with regard to ton-miles and the like. He had not himself seen it, but he had no doubt they would see it in due course. Too much importance might be attached to the ton-mile. It was not the ton-mile which of itself was necessarily of value, but what was of value was that the accounts should be kept in a form to enable that item to be ascertained, and to give all the details of the fluctuations of the traffic. In that sense he sympathised with the view that it was desirable to have a different form of tabulating the accounts, but, above all, what they wanted was to avoid having figures that—to use the expression of the railway world—had to "be got out." They wanted the accounts to keep themselves. If they could get them put into columns so that they would add up themselves, and so constitute the half-yearly returns, they would have made some progress in furnishing the officers with information which was really necessary to improve—if improvement were possible—the management and administration of English railways.

Mr. Baines observed that where, as in the present instance, the question was one of the application of statistical methods to material in actual daily use, it was the object of the Society to throw light upon the current system, and if defects appeared therein, to promote, so far as lay in its power, their correction. The case in point was a highly technical one, and must be left, to a great extent, to experts, many of whom were present. He had not heard any serious opposition to the general substance of Mr. Acworth's contention, so far as its statistical aspect was concerned, though criticism had strayed into the field of management and finance; and Mr. Gibb, an authority of weight among them, had confirmed Mr. Acworth's arguments. Lord Allerton, indeed, while refraining from following the latter to the full length of his case, admitted that revision of the present system was advisable. The Indian system, which had been mentioned with approval, related, it is true, to a simpler state of railway transactions, but in the main seemed to him applicable, so far as it went, to the work of the lines in this country. It was not beyond hope, therefore, that this discussion might turn out not merely platonic, but would bear fruit in the improvement of the matter to which it related, whether on the initiative of the Board of Trade, through whom the Parliamentary obstacles would have to be removed, or through the Railway authorities themselves. In either case, the Society would willingly aid, so far as its scope allowed, in the attainment of the desired object. Meanwhile, the vote of thanks to the reader, which he had the pleasure of moving, would no doubt receive the unanimous support of all present.

Mr. W. M. Acworth, in reply, said he hoped this paper would not, as in the case of Sir Juland Danvers's paper, have to wait fourteen years before any result followed. Lord Allerton had referred to ton-mile statistics, and he hoped Lord Allerton did not think that ton-miles were the only statistics wanted, or anything like it. Lord Allerton had also referred to the importance of having statistics constantly up-to-date. It seemed to him that the statistics the public ought to have were those which the general manager had already used, and that was, as far as he knew, what happened where the work was best done. Mr. Lawson reminded him of an interesting morning he spent with Mr. J. J. Hill in his office in New York, when they looked over together the returns and ton-mile figures of the Great Northern Railway, about 1,500 miles off at the nearest point. It was about the 10th of the month, but Mr. Hill had the ton-mile figures for the previous month, and was quite prepared to come down on the divisional superintendent whose ton-mile cost—of course an estimated cost—had gone up a fraction of a mill. As Mr. Lawson said, that was how the line had gone ahead, and set the example, of which other lines had made very good use. Even the management of the Pennsylvania

Railroad had been able to learn something at St. Paul. The real foundation and the substance of the management of the Great Northern of America was statistics. He quite agreed with Mr. Gibb and Lord Allerton in their objection to State interference, but in this case the question was settled for them. These returns existed by Act of Parliament. The form of the railway half-yearly reports was fixed by Act of Parliament. They did not want to put railway companies to the expense of two sets of figures—one because Parliament ordered it, and the other because they were of some practical use. But that was what it would be, unless they could get Parliament and the Board of Trade to acknowledge that they did not know so much about these matters thirty years ago as they did now. Lord Allerton had asked why he did not refer to India, which led the way in the matter of ton-miles? One reason why he had not done so was the difficulty in making comparisons, owing to their unfamiliar currency and weights and measures, and another reason was that the traffic was never competitive, and, as Mr. Baines had pointed out, the organisation there was altogether simpler. He thought the better comparison was with America. With regard to Argentina, their reports were particularly interesting, because, being all English railways, they had started on the basis of our English reports, and elaborated them in all directions, thus showing how inadequate the English reports as unelaborated were. But they were still on English lines, and he thought those lines were unfortunately drawn, as, for example, in mixing up locomotive repairs with locomotive running. He did not think anyone would deny that that was wrong in principle. Mr. Price-Williams must have misunderstood him. He did not say, and could not have said, that the North Eastern was going to show its cost per ton-mile. It could, of course, as the Great Northern of America did, work out an estimate of that cost, and if it made its estimate year after year on the same basis, it would be worth something for comparison with itself, but to say that the North Eastern was going to bring out the actual statistical figures showing the cost of carrying a passenger or a ton of coals to Tyne Dock, was to state that that was possible which was impossible in the nature of things. Mr. Cohen could not imagine that a railway manager did not know the receipts of his own company per ton-mile or per passenger-mile. But, unfortunately, it was true, and some railway managers did not believe that such figures could be any use at all, and did not want them. Sir Henry Burdett had said that English railway companies had in ten years added 270 millions to their capital, whilst they had only added some 2,000 miles to their lines. That seemed to point to an expenditure of about 125,000*l* a mile, and a good many critics would no doubt say that was a shameless rate of expenditure. But that was exactly where the Board of Trade statistics led the public astray. According to the Board of Trade statistics it was true there were only some 2,000 miles odd of new lines built, but the Lancashire and Yorkshire had added 238 miles of new "track" in the last five years, while the Board of Trade returns only credited them with 30 miles of new line. As everybody knew, the South Western, the Midland, and many others had quadrupled what was previously a double line, but again that did not appear, though the cost of the new pair of lines was probably much higher than that of the original two lines. Here was another instance where railway companies were unjustly criticised, because the statistics necessary to justify their actions were not properly kept and published.

A hearty vote of thanks to the author for the paper was then put to the meeting, and unanimously accorded.

MISCELLANEA.

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I.—*Sir Juland Danvers.*

THE death of Sir Juland Danvers, who passed away on the 18th October, 1902, has deprived the Royal Statistical Society of one of its distinguished members. The son of the late Frederick Dawes Danvers, Secretary and Registrar of the Duchy of Lancaster, he was born in 1826, and was educated at private schools and King's College, London. At the age of sixteen he entered the London office of the East India Company in 1842, where he was for some years in the secretary's office, and became private secretary to two successive chairmen, Sir James Weir Hogg, Bart., and Sir Archibald Galloway, K.C.B. He became assistant secretary to the East India Company in 1858, and on the transfer of India to the Crown, and the creation of a Secretary of State for India in Council, in the last named year, Juland Danvers was nominated secretary in the Railway Department of the India Office, and in 1861 he was made Government Director of Indian Railways. In that capacity he, in 1875-76, was deputed to India, where he made an inspection of the whole of the Indian railway system, and for many years the Reports on Indian Railways, presented annually to Parliament, were compiled by him. From 1880 to 1892 he held, in addition to his other appointments, that of secretary in the Public Works Department of the India Office. Sir Juland Danvers was made a Knight Commander of the Star of India in 1886, and retired from the public service in 1892, being the last on the staff of the India Office who was allowed to serve for the full period of fifty years. With his retirement from his official positions he by no means lost touch with the Indian railway system, with which he had been so long and so closely identified. He was a director of the Bombay, Baroda, and Central India Railway, of the South India Railway Company, and of the

South Behar Railway Company, of which latter he was chairman of the Board.

His connection with the Royal Statistical Society was begun in the year 1873, when he was elected a Fellow. Four years later he joined the Council. Not only was he a donor to the Library, but he contributed a very valuable paper—referred to by Mr. Acworth in the present issue of the *Journal*—on the Defects of English Railway Statistics. This was read on the 20th December, 1887, and appeared in the issue of the *Journal* for March, 1888. In 1851 Juland Danvers married Sarah Frances, daughter of the Rev. Henry Rochfort, Rector of Vastina, Co. Westmeath.

II.—*Memorandum on some Estimates made by various Authorities of the Production of Meat and Milk.* By R. Henry Rew.

[This Memorandum was prepared for the use of, and has been laid before, the Committee of the Society now engaged on an inquiry into the subject of the Production and Consumption of Meat and Milk in the United Kingdom.]

Prior to the year 1866, when official returns of the number of live stock in Great Britain were first collected, the statistician who attempted to estimate the quantity of meat or of milk, produced in the country had practically no certain basis for his calculation. The total number of animals living on a certain day in the year, and still more the number of animals of different ages, now provides at least the first essential factor in the calculation, and in its absence the probability of error must, in the nature of things, have been substantially increased.

Thus, when McCulloch, in his *Statistical Account of the British Empire* (1837), estimated that "about a fourth part of the entire stock" of cattle in Great Britain was annually slaughtered, he no doubt did so as the result of inquiries which gave the estimate some statistical authority. But when he had to apply this to another estimate, still more difficult to make, of the total number of cattle in the country, which he put at 5,220,000, it is evident that the probability of reasonable accuracy was somewhat remote. As regards sheep, McCulloch quoted, and apparently accepted, a previous estimate by Luccock, that in 1800 the total number of sheep and lambs in England and Wales was 26,148,463, of which 6,802,721 (= 26 per cent.) were slaughtered in the year.

In 1868 Sir James Caird, in a paper read before this Society, estimated that one-fourth of the cattle in the United Kingdom, one-third of the sheep in England and Ireland, and one-fourth of the sheep in Scotland were annually sold.

In 1871, Mr. John Algernon Clarke, in the *Chamber of Agriculture Journal*, estimated that two-sevenths of the cattle, one-half of the sheep, and a number equal to all the pigs enumerated in the Agricultural Returns were annually slaughtered. The average weight of meat produced by each animal was calculated by him at the following rates for the years 1867-70: cattle (including calves) 560 lbs., sheep and lambs 56 lbs., pigs 90 lbs.

In 1872 the *Journal of the Royal Agricultural Society* contained an article[1] by Sir Henry Meysey Thompson, which is of great importance in this connection, by reason of the fact that it laid down a basis of calculation, as the result of personal inquiries and with the assistance of practical men, which has been generally accepted, with slight modifications, by subsequent writers and in many official returns. Treating the whole of the cattle, sheep, and pigs in the United Kingdom as if they were on one huge farm, he assumed that the relative proportion of different classes of stock and their disposal would be the same for the total number enumerated in the returns as in the case of an average self-maintaining herd. In a summarised form the calculation stood thus:—

Cattle.	Number in Herd.	Number Available for Market.	
Cows	100	20	Calves born = 80 per cent. of cows
Bulls	2	1	
Young stock—			
Under 12 months	80	8	= 10 per cent. of calves born
1 year to 2 years	72	—	
2 years and under 3 years	72	51	
	326	80	
Deaths = 3 per cent.	10	2	
	316	78	Average weight 600 lbs.

Five-sixths of the veal calves, equal to 2 per cent. of the whole herd, were assumed not to be recorded in the Returns by reason of the fact that they were born and killed between one enumeration and the next, and after making allowance for this, the total number of the whole herd available for slaughter in the year was estimated at 25 per cent.

Summarising the figures for the assumed self-maintaining flock, the calculation stood as under:—

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[1] "On the Management of Grass Land, with especial reference to the Production of Meat," *Journal of the Royal Agricultural Society of England*, 2nd series, vol. viii.

Sheep.	Number in Flock.	Number Available for Market.	
Ewes	100	33	Lambs born = 130 per cent. of ewes
Rams	2	1	
Lambs	130	32	= 25 per cent. of lambs born
Shearlings	98	64	
	330	130	
Deaths = 5 per cent.	17	5	
	313	125	Average weights: sheep 72 lbs., lambs 24 lbs.; sheep and lambs together 60 lbs.

Half the lambs slaughtered, or 5 per cent. of the whole flock, were reckoned as omitted from the Returns, and the number available for market was thus estimated to amount to 42 per cent. of the total number of sheep enumerated.

Similarly with regard to swine, the hypothetical herd was constituted thus:—

Pigs.	Herd.	Number Available for Market.	Weight.	Average.
			lbs.	lbs.
Sows	20	10	250	134
Boar	1	1	250	
Porkers	168 } 280	168	65	
Bacon pigs	112	90	250	
	301	269		
Deaths = 3 per cent.	9	8 } 19	—	—
To replace breeding stock	—	11		
	292	250	—	—

Three-fifths of the porkers were estimated to be omitted from enumeration in the Agricultural Returns, and the proportion of pigs annually slaughtered was put at 116 per cent. of the number enumerated.

Sir H. Thompson's calculations are however seen, on close analysis, to be open to criticism on various points of detail. Taking first the cattle calculation, there is a possibility of some confusion in applying Sir H. Thompson's formula to the Agricultural Returns, by reason of the fact that a certain number of "cows or heifers in milk or in calf" may be included among his "young stock." At any rate, the estimate for calves does not work out satisfactorily when applied to the present Returns. Thus, if we take 2 per cent. of the total cattle enumerated in the United Kingdom in 1901 (11,476,536), we get 229,530, which being *ex hypothesi* five-sixths of the number marketed, makes the total of calves marketed 275,436. But the calves marketed are, according to Sir H. Thompson, 10 per cent. of the number born; consequently the number born would be 2,754,360, which is 67 per cent. of the "cows and heifers in milk or in calf" enumerated, whereas his estimate is 80 per cent. This may indicate that what he terms "cows" do not represent the only corresponding item in the Returns, viz., "cows and heifers in milk or in calf," but some smaller number which must be estimated before his formula can be applied. It may be noted further that Sir H. Thompson's general estimate of 25 per cent. slaughtered, which has so frequently been adopted as applying to the total herd, *i.e.*, to the total number of cattle enumerated, represents not one-fourth of his "total herd," but one-fourth of the herd less the year's deaths. Moreover the herd is assumed to be "self-maintaining," that is contains the same number of animals at the end as at the beginning of the year. As the number of calves born is 80, it is clear that the total number lost in the year must be 80 also. But it will be seen that Sir H. Thompson reckons 78 as marketed in addition to 10 deaths among the stock retained. Evidently, therefore, the number marketed, to retain the herd at its original numbers, would be 68. But the deduction of deaths from those intended to be marketed appears to be an error, as 3 per cent. was already deducted from the total herd. Consequently the number marketed would be 70, and the percentage slaughtered would be 21, not 25.

A similar error to that last mentioned occurs in regard to sheep, where again the loss by death is charged against the total number and also against the number marketed. Allowing for this, the number marketed would be 130, or exactly the number of lambs born. But the flock would not then be self-maintaining, because 17 deaths are assumed. Consequently the number marketed should be 130 — 17 = 113, or, allowing for the addition of lambs not enumerated, 36 per cent. of the total, instead of 42.

Again, in the calculation as to pigs, there is, to begin with, an arithmetical error in the statement that "a herd of 292 pigs of all ages will supply annually for slaughter 250 = 87½ per cent." This should read 85½ (85·62). And in this case also 292 represents the total herd less deaths, and the percentage, if applied to the original total, 301, would be further reduced to 83. But when Sir H. Thompson included as annually available for market only four-fifths of the bacon pigs as "killed yearly," he does not appear to have taken into account the fifth coming forward from the previous year, which in any given year would be also available for market. Further, he stated that of the 168 porkers 101 would not appear in the Returns, being born and killed between one enumeration and the next. Therefore, he said, "it will be necessary to add 33 per cent. to the number of pigs in the Government return." But if 101 were deducted from 301 (the total herd), the pigs enumerated in the Returns would be represented by 200, and to raise 200 to 301 is to add 50 and not 33 per cent. It appears, therefore, making all these corrections, that Sir H. Thompson's hypothesis would represent not 116 but about 136 per cent. of the total number of pigs enumerated as slaughtered.

These observations[2] have appeared to be necessary by reason of the authority which has naturally attached to the calculations published by Sir H. Thompson, and it may be added that, apart from the errors to which reference has been made, the changes which have occurred in the general methods of breeding and feeding stock during the past thirty years would in any case necessitate a re-examination of the problem in the light of present conditions.

The *Report of the Veterinary Department of the Privy Council for* 1872 contained an estimate of the meat production of Great Britain, which assumed in the case of cattle that as the number returned as "above 2 years" remained constant, a number equal to one-half of the cattle "under 2 years of age" died or were killed each year, in addition to 50,000 calves which were born and killed between the dates of collecting the returns. Sheep were stated to be "estimated in a somewhat similar manner," while a number equivalent to all the swine enumerated was taken as representing the number of pigs annually slaughtered. The weights given by Mr. Clarke in the *Chamber of Agriculture Journal* for 1871 were adopted.

In the same year, Mr. H. M. Jenkins, then Secretary of the Royal Agricultural Society of England, read a paper before the Farmers' Club on the results of large and small farm systems in providing food for the people, and adopted Sir H. M. Thompson's calculations as to the home production of meat. He also discussed the question of the amount of meat which might be annually produced, on an average, from 100 acres of land, assuming it to be cultivated exclusively for the purpose of meat production, taking into account the number of animals required for breeding purposes so as to maintain a uniform supply for the butcher year after year. On the basis of the replies received to a number of inquiries, he estimated this at from 83 to 88 cwts. He estimated that every 100 acres under grass and green crop in Great Britain produced annually about 81½ cwts. of meat, or at the rate of 91 lbs. per acre.

In 1873 Mr. J. A. Clarke, in evidence before the Select Committee of the House of Commons on Contagious Diseases of Animals, handed in tables showing the meat production calculated on a new basis; these tables were revised and published in the *Chamber of Agriculture Journal* in October, 1875, and again reproduced in his article on "Practical Agriculture" in the *Royal Agricultural Society's Journal* of 1878.[3] His calculations were based on the replies received to a series of questions addressed to thirty-three prominent agriculturists in eighteen counties in England and Wales, and six counties in Scotland. On the basis of the information thus obtained it was assumed that 38½ per cent. of the cows calved in the first quarter of the year, 37½ per cent. in the second quarter, 10½ per cent. in the third quarter, and 13½ per cent. in the fourth quarter. Every 100 cows were assumed to produce 76 live calves in a year, of which 11 per cent. died in the first year of their life, and 16 per cent. were killed at the average age of 2 months for veal. Only about one-seventh of these veal calves would appear in the returns. Cows were assumed to be sent to the butcher on an average after four calvings, and their mortality was put at 8 per cent. per annum. Of cattle killed, not including draft cows, 50 per cent. were reckoned as killed at 2 to 3 years, 42 per cent. at 3 to 4 years, and 8 per cent. at greater ages.

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[2] To Mr. R. E. Turnbull, who has rendered most valuable assistance to the Committee and to me personally, is due the credit of first calling attention to several of the points referred to in this criticism of Sir Henry Thompson's calculations."—R.H.R.

[3] *Journal of the Royal Agricultural Society of England*, 2nd series, vol. xiv.

The following table shows the principal points in Mr. Clarke's estimate for cattle:—

Description.	Number Included in the Returns.	Percentage of Deaths.	Number Killed for Meat.	Per Cent. of Number in the Returns.	Dead Weight per Head.	Heifers Added to Stock of Cows.
Cows	3,700,000	8	528,300	14¼	700	—
Calves. Number born 2,812,000	—	11	376,400	16	112	—
Cattle—						
Under 1 year	2,190,000	10	60,000			250,600
„ 2 years	1,739,000	6	20,600	1⅕	560	266,400
„ 3 „	1,376,000	4	350,000	39	756	290,000
„ 4 „	682,000	4	450,000		896	—
„ 5 „	223,000	4	100,000		896	—
Over 5 „	118,000 50,000	—	50,000			
	10,078,000	—	1,935,300	19	—	807,000

It should perhaps be observed that the "number included in the returns" does not appear to agree precisely in its total with any return published at that date, while the apportionment under ages is an estimate made by Mr. Clarke, as the Returns did not then distinguish cattle of different ages. With regard to all the calculations it is somewhat difficult to follow the methods adopted.

Mr. Clarke's investigations also included sheep, and he received replies to a schedule of questions from thirty-two persons, relating to eighteen counties in England and Wales, and six counties in Scotland. He came to the conclusion that of the total fall of lambs, 18 per cent. were killed for "lamb" at the average age of 15 weeks, weighing 42 lbs. each; that the average age of sheep (except drafted ewes) when killed was 21 months, and of ewes 5½ years; that the dead weight of sheep of all breeds and ages (except lambs) was 77 lbs. per head. Of the 18 per cent. of lambs killed, 13 per cent. were probably killed before the census, leaving only 5 per cent. to be enumerated. Allowing for the very heavy mortality in breeding flocks, and for the enumeration of ewes five times and of other sheep, including rams, twice, the calculation worked out that for 33 million sheep and lambs, of which about one-third were lambs, enumerated in June, there were annually killed about 2 million lambs and about 7 million sheep. These figures indicate that 31 per cent. of the sheep and lambs enumerated were slaughtered, 13 per cent. of the lambs born being slaughtered without appearing in the returns.

With regard to pigs no explanation of the method of calculation adopted was furnished, but the supply of pork and bacon was stated by Mr. Clarke to consist of 3 million sucking pigs and porkers, averaging 70 lbs. at 5 months old, and 1,800,000 bacon pigs, averaging 280 lbs. at 1¼ years old. The number of pigs given in the returns for 1874 was 3,537,354, so that pigs annually slaughtered would appear to be 136 per cent. of the number enumerated.

Mr. James Macdonald, in an article on the relative profits of horse, cattle, and sheep breeding, published in the *Journal of the Royal Agricultural Society* for 1876,[4] estimated that one-fourth of the cattle, five-twelfths of the sheep, and the equivalent of the whole of the pigs shown in the Returns were killed annually, at an average weight of 700 lbs. in the case of cattle, and 70 lbs. and 140 lbs. in the case of sheep and pigs. No allowance was made for the number of veal calves and lambs which escaped enumeration, nor any deduction made for losses by disease and death, but Mr. Macdonald was of opinion that these two factors would, "roughly speaking," counterbalance one another. With regard to pigs, he considered that the total returned did not represent the actual number of pigs annually slaughtered, but that the average weight of 140 lbs. might be rather high.

Mr. (afterwards Sir) James Caird, in his address to the Social Science Congress in 1877, on "Food Supply and the Land Question," estimated the home production of meat at three-fourths of the total supply, and stated that during the preceding twenty-five years there had been no great increase in the home supply, though the quality had much improved. In 1878 the same authority put the home production of butcher's meat, bacon, pork, and ham at 24,500,000 cwts. (being about 1½ million cwts. more than Mr. Clarke's estimate), but no explanation was given of the method of calculation adopted.

In 1884 Major Craigie read a paper before the British Association for the Advancement of Science, at Montreal, in which he adopted, with a slight modification, "as sufficient, at all events for comparative investigation," the basis of calculation proposed by Sir H. M. Thompson in 1871. Major Craigie estimated the percentage of sheep slaughtered at 40 per cent., and their weight at 70 lbs., whereas the earlier calculation provided for 42 per cent., at an average weight of 60 lbs. In connection with these figures, it is interesting to note that in the preceding year (1883) Major Craigie, in his paper on Agricultural Statistics, read before this

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[4] *Journal of the Royal Agricultural Society of England*, 2nd series, vol. xii.

Society,[5] after making some comparisons between the results obtained by the respective methods of Mr. Clarke and Sir H. M. Thompson, came to the conclusion that the latter gave a result which most nearly coincided with an assumed standard of meat consumption.

Mr. W. C. Little published some tables about 1886 dealing with the value of farm produce, and accepted as sufficient for his comparative calculations relating to beef and mutton the modification of Sir H. M. Thompson's scale proposed by Major Craigie. In making a comparison of the production of beef in the two decades 1866-75 and 1876-85, he observed that "if, as appears from the Agricultural Returns, a larger proportionate number of cattle are now employed for dairying, it follows that a smaller output of meat will result." Pigs, as well as dairy produce, were omitted from his calculations, because he felt that "he had not sure ground to go upon."

Mr. James Howard published in 1888 an estimate of the annual value of the farm produce of the United Kingdom, in which he adopted Sir H. M. Thompson's formula, but he pointed out that if the total weight of pork produced in the kingdom were to be estimated, it would be necessary to add a considerable amount for pigs kept in towns and by villagers which are not enumerated in the Government Returns.

In 1893 Mr. (now Sir) T. H. Elliott, Secretary to the Board of Agriculture, in giving evidence before the Select Committee of the House of Lords on the marking of Foreign Meat,[6] presented tables showing the home production of meat of the United Kingdom in 1892. These figures, being based on those previously adopted by Major Craigie, assumed that for every 1,000 living cattle of all ages, 67 tons of beef or veal were available annually, for every 1,000 living sheep 12½ tons of mutton or lamb, and for every 1,000 pigs enumerated 69½ tons of bacon, ham, or pork. Similar tables for later years were handed to the Select Committee on the Agricultural Produce (Marks) Bill in 1897.[7]

Sir Robert Giffen, in his evidence before the Royal Commission on Agriculture in 1894, handed in a table putting the production of meat at 1,500,000 tons in 1891. This estimate was based on a method similar to that followed in the calculations of Mr. Howard, which in their turn rested on Sir H. Thompson's formula.

Mr. R. E. Turnbull has on several occasions made elaborate and painstaking estimates of the quantity and value of the meat supply of this country. His conclusions are embodied in a paper read before the Farmers' Club in 1893, in his evidence before the Royal Commission on Agriculture in 1896, and more recently in an article on "Farm Revenue and Capital" in the *Transactions of the Highland and Agricultural Society of Scotland* for 1898.[8] Mr.

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[5] *Journal of the Statistical Society*, vol. xlvi, 1883.

[6] H.L., 214.

[7] H.C., 365.

[8] *Transactions of the Highland and Agricultural Society of Scotland.* 5th series, vol. x.

Turnbull's method of estimating the production of meat may be summarised as follows:—

Cattle.—From the total number of cattle enumerated in any year, 3½ per cent. is deducted to allow for loss by natural mortality, and from the remainder is deducted the number of cattle above 1 year enumerated in the succeeding year. This gives the number of cattle slaughtered during the twelve months as indicated by the returns. An addition is made for veal calves, which do not appear in the returns, by a formula which, together with that for cattle, may be conveniently expressed as follows:—

CATTLE.

A.	B.	C.
Number returned on 4th June as "above 1 year old."	Total number returned in preceding year.	Mortality at the rate of 3½ per cent. of B.

B − A − C = number sold fat. Average weight (including veal calves enumerated) 5½ cwt.

CALVES.

D.	E.	F.
Number born = total number of cows, &c., in United Kingdom, less 7½ per cent. of cows, &c., in Great Britain and islands.	Mortality at the rate of 7½ per cent. of D.	Number returned as "under 1 year."

D − E − F = number of calves sold. Average weight 85 lbs.

The fat cattle and veal calves slaughtered are by this basis reckoned, on the average of twenty-five years, as 28·12 per cent. of the total number of cattle enumerated.

Sheep.—Mr. Turnbull's calculation for sheep is made by a similar method, allowing a mortality of 4 per cent. The number of lambs born after one census and fattened and sold before the next, is estimated to be equal to 10 per cent. of the lambs enumerated at the end of that year, while 10 per cent. of the number of lambs enumerated at the beginning of the year are also estimated to be sold as fat lambs. The difference between this latter number and the total number of sheep missing between the date of two returns, less the number lost by death, represents the number of sheep sold for mutton. The average weight of sheep is put at 70 lbs., and of lambs at 35 lbs.

Pigs.—Each sow in the Agricultural Returns is estimated by Mr. Turnbull to produce on an average 10 pigs, which were either sold or enumerated. The mortality among the pigs enumerated was put at 3½ per cent. for the years 1872-86, 3¾ for 1887-91, and 5 per cent. for 1892-97. On this basis, the number of pigs fattened for bacon and pork is estimated by adding to the number given in the returns, less deaths, the number of pigs reared, and deducting from this total the number given in the returns for the succeeding year. On the average of twenty-five years the number slaughtered was thus estimated as about 140 per cent. of the total enumerated.

Generally speaking, this method of calculating the numbers slaughtered is much more simple and satisfactory than the more hypothetical methods adopted by earlier statisticians, such as Sir Henry Thompson and Mr. J. A. Clarke, but, in fairness to them, it must be remembered that the Agricultural Returns in their day did not lend themselves quite so readily to the method adopted by Mr. Turnbull.

The complexity of the various estimates above cited makes it difficult to recapitulate them in a form convenient for comparison, but the following statement shows the different estimates of the percentage slaughtered out of the total number enumerated, and the average weight per head adopted by the principal authorities who have been referred to:—

Authority.	Date of Estimate.	Percentage Slaughtered of Total Number Enumerated.			Average Weight per Head, in lbs.				
		Cattle.	Sheep.	Pigs.	Cattle.	Calves.	Sheep.	Lambs.	Pigs.
		Per cent.	Per cent.	Per cent.					
McCulloch	1837	25	26	—	—	—	—	—	—
Caird	'68	25	33* 25†	—	—	—	—	—	—
Clarke	'71	28·5	50	100	560‡	—	56§	—	90
Thompson[*]	'72	25	42	116	600‡	—	72	24	134
Clarke	'75–78	19	31	136	789	112	77	42	149
Macdonald	'76	25	41·7	100	700‡	—	70§	—	140
Craigie........	'84	25	40	116	600‡	—	70§	—	134
Little	'86	25	40	—	—	—	—	—	—
Turnbull....	'98 ...	28·12	36·6	140	616‖	85¶	70	85	126

* England and Ireland. † Scotland.

‡ Including calves. § Including lambs.

‖ Excluding veal calves enumerated in Returns 630 lbs.

¶ "Marketable" veal calves only, 90 lbs.

It should be observed that in some cases the percentages were not actually given by the persons responsible for the estimates, but have been calculated from the figures given by them.

Turning now from Meat to Milk, it may be observed that in the works of earlier agricultural writers and statisticians very little bearing on the general question of milk production is to be found, although reference is frequently made to the results obtained from individual cows or herds, or from limited districts. It may be mentioned, however, that McCulloch quotes an estimate by Marshall that the produce per cow in "butter dairies" in the early part of the nineteenth century was 168 lbs. of butter per annum, which, reckoning 3 gallons of milk to the pound (a ratio which would probably be none too high for the skilled butter maker at that period), would give an average of 504 gallons of milk per cow. On the same authority the average yearly produce of cheese from a single cow in England was put at from 3 to 4 cwt., or, say, from 336 to 448 gallons of milk. These estimates, whatever their value, must no doubt be considered as applicable in each case to cows specially kept for the purpose of butter and cheese production respectively.

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[*] The percentages slaughtered, if the corrections of the calculations suggested on pp. 668—9 were made, would be cattle, 21, sheep 36, pigs 136.—R.H.R.

The first serious attempt to arrive at an estimate based on an actual investigation of the facts appears to have been that made by Mr. John Chalmers Morton in 1865, in a paper on the London milk supply read before the Society of Arts.

Ten years later, in the *Journal of the Royal Agricultural Society* for 1875,[10] Mr. Morton dealt with the wider question of the national supply, and estimated the average annual quantity of milk yielded per cow in England at 420 gallons, qualifying this, however, by the statement that "considering the comparatively low production of Hereford, Devonshire and Sussex, and some other counties, the quantity of milk to be dealt with in English dairies upon the whole is probably not more than 650 millions of gallons annually," which would reduce his estimate to about 400 gallons per cow. Three years later, in the Journal of the same Society, Mr. Morton made an estimate for Great Britain, in which he calculated that the cows and heifers in milk or in calf enumerated in the Returns would each yield on an average rather more than 440 gallons per annum, of which probably one-sixth would be taken by the calf. The effective production of milk per cow was thus put at about 370 gallons. Again, in 1885, in his handbook on the *Dairy of the Farm*, Mr. Morton put the average yield at 320 gallons, less one-twelfth for calves, or 294 gallons net. It may be added that in a later edition of this book, edited by Professor J. Long, and published in 1892, this estimate was further modified, and the annual yield was put at about 360 gallons per cow, less one-fifteenth for calves, or 336 gallons net production.

Professor J. P. Sheldon, in his work on *Dairy Farming*, published in 1879, estimated the gross production per cow in the United Kingdom at 440 gallons, less one-eighth for rearing calves, or about 385 gallons net. Ten years later, in 1889, Professor Sheldon remarked that he was disposed to raise his estimate by 20 gallons, "because a good deal of attention has been paid in the interval to the improvement of the milking properties of cows," thus bringing his net estimate to 403 gallons.

In 1888 Mr. J. Howard made an estimate of the value of farm produce in the United Kingdom, in which the production of milk represented approximately an effective annual yield per cow of about 360 gallons.

Reference may perhaps be permitted to a paper entitled "An Inquiry into the Statistics of the Production and Consumption of Milk and Milk Products," read before this Society in

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[10] *Journal of the Royal Agricultural Society of England*, 2nd series, vol. xi.

1892 by the present writer.[11] The result of estimates obtained from 74 farmers, representing some forty-five districts of Great Britain, indicated that the gross annual yield per cow was 528 gallons, of which 93 gallons were used for calves, leaving a net available yield of 435 gallons. The actual records of annual production obtained from 50 herds in Great Britain gave a net yield per cow (*i.e.*, per "cow and heifer in milk or in calf," as enumerated in the Agricultural Returns) of 471 gallons. Other facts bearing on the question, including certain returns from Ireland, were discussed, with the result that the "net average available yield of milk per cow for the United Kingdom" was put at 400 gallons, and it was suggested that in applying this standard for the purpose of calculating the total production, a deduction of 10 per cent. should be made for non-effective animals from the number of cows and heifers enumerated in the Agricultural Returns. The total production of milk available for consumption in all forms was thus reckoned for the year 1890 (*i.e.*, on a stock of 3,938,416 cows and heifers in milk or in calf) as 1,417 million gallons. The amount of butter and cheese made, and the relative consumption of milk as milk, or in one or other of its manufactured forms, were considered, and the result of investigations on these points were given. The general outcome of the inquiry as a whole was expressed in the following summary, representing the estimated production and consumption for the United Kingdom in the year 1890:—

Dairy Produce.	Consumption per Head.			Total Quantity of Milk represented. (In millions of gallons. 000,000's omitted.)		
	Home Produce.	Foreign Produce (Net Imports).	Total.	Home Produce.	Foreign Produce.	Total.
	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.
Milk	15	—	15	570	—	570
	lbs.	lbs.	lbs.			
Butter	6·2	8·8	15	617	884	1,501
Cheese	5·9	6·1	12	224	232	456
Miscellaneous, condensed milk, &c.	—	—	—	6	13	19
	—	—	—	1,417	1,129	2,546

This estimate has been adopted as a basis for subsequent calculations, as, for example, by Sir Robert Giffen in a memorandum on the "Agricultural Production of the United Kingdom," laid before the Royal Commission on Agriculture,[12] and by Mr. R. F. Crawford, in his paper on "Food Supply in the United Kingdom, Belgium, France, and Germany," read before this Society in 1899.[13]

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[11] *Journal of the Royal Statistical Society*, vol. lv, part ii.

[12] *Royal Commission on Agriculture*, 1893, Evidence, vol. iii, App. Avi.

[13] *Journal of the Royal Statistical Society*, vol. lxii, part iv.

Mr. R. E. Turnbull has on several occasions published carefully considered estimates of the milk production of the United Kingdom, the latest and most detailed calculations being those given by him in his previously mentioned article on "Farm Capital and Revenue," which appeared in the *Highland and Agricultural Society's Transactions* for 1898. The method adopted by him may be briefly summarised. In the first place, 7½ per cent. was added to the number of enumerated cows in Ireland, to bring them into line with the Returns for Great Britain, which include (as the Irish Returns up to the year 1900 did not) heifers in calf for the first time.

The total dairy herd is then accounted for as follows:—

Class.	Description.	Estimated Average Yield of Milk.
A	Cows calving third or fourth calf	45 cwt.
B	,, second calf in autumn	40 ,,
C	,, ,, spring	35 ,,
D	Heifers calving first calf in autumn	30 ,,
E	,, ,, spring	7½ ,,
F	Cows calving second calf in winter	30 ,,
G	Heifers calving first calf in winter	22½ ,,
H	,, in calf (not in milk)	— ,,
K	Aged and barren cows sold fat	15 ,,

These figures were applied with great statistical elaboration to the period of twenty-five years from 1872-97 on the basis of quinquennial averages, and the results for that period show an estimated average yield per cow of 34·4 cwts. (about 385 gallons) of milk. The total quantity of milk annually produced in the United Kingdom was thus 136,172,800 cwts., and of this the human consumption of new milk was estimated at 1¼ cwts. (14 gallons) per head, and the consumption by calves at 5¾ cwts. (64 gallons) each. The estimated production of cheese and butter per head of population was as follows for each of the quinquennial periods for which the figures were calculated:—

	Butter.	Cheese.
	lbs.	lbs.
1872–77	6·15	8·40
'77–82	5·50	7·55
'82–87	5·35	7·30
'87–92	5·30	7·22
'92–97	5·10	6·95

Taking again the twenty-five year averages, the average annual production of milk was thus apportioned:—

	Cwts. of Milk.	Approximate Equivalent in Gallons.
For butter (1,757,860 cwts.)	44,746,800	492,215,000
„ cheese (2,397,120 „)	26,847,800	295,326,000
„ calves	19,573,000	215,303,000
New milk sold and consumed in farm houses	45,005,200	495,057,000
Total production	136,172,800	1,497,901,000
Skim milk and separated milk: ¼ cwt. per head of population	9,000,800	99,009,000

It may be noted that according to Mr. Turnbull about 33 per cent. of the aggregate quantity of milk produced was made into butter, about 20 per cent. into cheese, and about 33 per cent. was sold or consumed as new milk.

An estimate of milk production was made by Sir James Blyth (Chairman of this Committee), in a paper read before the Farmers' Club in 1899. He assumed that "a fair all-round yield" per cow per day was 1⅜ gallons (11 imperial pints), or an annual production from 4 million dairy cows of 2,006 million gallons, equal to 50 gallons of milk for all purposes per head of population. From this 50 million gallons were deducted for the rearing of calves, or 20 gallons per calf. Consequently by this calculation the effective annual average production of milk per cow would be about from 480 to 490 gallons. Sir James Blyth further estimated that 800 million gallons—equal to 20 gallons per head of the population—is consumed annually as milk, and that of the remainder one-fourth is made into cheese, and three-fourths into butter.

The various estimates of milk production above referred to are brought together for comparison in the following table:—

Authority.	Date.	Gross Yield.	Deduct for Calves.	Net Yield.
		Gallons.		Gallons.
Morton	1875	400	—	—
„	'78	440	$\frac{1}{6}$	370
„	'85	320	$\frac{1}{12}$	294
„ (revised by Professor Long)	'92	360	$\frac{1}{15}$	336
Sheldon	'79	440	$\frac{1}{8}$	385
„	'89	460	$\frac{1}{8}$	403
Howard	'88	—	—	360
Rew	'92	—	—	400*
Turnbull	'98	385	$\frac{1}{6}$	321
Blyth	'99	500	$\frac{1}{25}$	480

* On 90 per cent. of cows and heifers enumerated.

III.—*Some Additional Notes on a "Short" Method of Constructing Life-Tables.* By T. E. HAYWARD, M.B. (Lond.), F.R.C.S. (Eng.), *Medical Officer of Health for Haydock, Lancashire.*

THE recent publication of a new Life-Table for London, based on the experience of 1891—1900, has given an opportunity for further testing the accuracy of the modification of the late Dr. Farr's short method of Life-Table construction which was described in the *Journal of the Royal Statistical Society*, vol. lxii, part iii, pp. 470—480.

It is the more desirable to make the test in this particular instance, because the new London Life-Table has been constructed by an "extended" method, which was fully described in the same paper to which reference has already been made; *see* vol. lxii, parts iii and iv, pp. 443 *et seq.*, and 683 *et seq.*; also vol. lxiii, part iv, p. 626, paragraphs (*c*) and (*d*).

By means of the modified short method it is possible to obtain with but comparatively little labour a series of values representing the expectation of life at quinquennial intervals from birth (that is, age 0) to age 95.

A reference to the table on p. 691 of vol. lxii, part iv, will show with what a remarkable degree of closeness the E_x values obtained by the short method approximate to those of the extended method (among other instances) in the case of the Life-Table for England and Wales based on the data for 1881-90.

If therefore it can be shown that by the application of precisely the same short method to the data of the new London Life-Table, results equally good can be obtained, the presumption will be strengthened that in the case of any other Life-Table this short method may be used with confidence that the results obtained by it will be very nearly those that would be obtained by the much more laborious extended method.

Having made the necessary calculations, the writer would draw attention to the comparative results, which are set down in Table 2, an inspection of which will go far to establish the point in question.

However, the E_x values given in this Table 2 of course represent in years the mean expectation of life (or mean after-lifetime) at the *exact* age x, and they are not in this form available for making use of those interesting and striking applications of a Life-Table which are associated with the term "Life-Capital," for which we need to have the mean expectation of life in *age-groups*, that is, the average future life-time of all the individuals included in an age-group x to $x + n$.

Subsequently to the publication of the paper in vol. lxii of the *Journal*, in the year 1899, the writer had occasion, while preparing a paper afterwards contributed to the *Transactions of the British Congress on Tuberculosis* (*see* vol. ii of these *Transactions*, pp. 382—393), to investigate this point, and to find out whether the short method of Life-Table construction could be made not only to give the values of E_x and of E_{x+n}, but be also adapted to arriving at values of $E_{x \text{ to } x+n}$, corresponding with sufficient accuracy to those obtained from an extended Life-Table.

After some experimental work, certain simple methods were hit upon which, when applied to the Life-Table for England and Wales, 1881-90, gave the results which are set down in Table 1.

TABLE 1.—*Mean Expectation of Life in Groups of Ages for England and Wales*, 1881-90. *Comparison of Values Derived from Extended Life-Table* (*a*) *with those obtained by a Shortened Method* (*b*).

Age-Groups.	Males.			Females.		
	(*a*).	(*b*).	Differences of (*b*) from (*a*).	(*a*).	(*b*).	Differences of (*b*) from (*a*).
0— 5........	51·28	51·33	+ 0·05	53·45	53·46	+ 0·01
5—10........	50·57	50·63	+ 0·06	52·60	52·61	+ 0·01
10—15.......	46·43	46·49	+ 0·06	48·52	48·53	+ 0·01
15—25.......	40·27	40·33	+ 0·06	42·44	42·46	+ 0·02
25—35........	32·60	32·61	+ 0·01	34·83	34·80	− 0·03
35—45........	25·51	25·48	− 0·03	27·66	27·65	− 0·01
45—55........	18·95	18·93	− 0·02	20·67	20·63	− 0·04
55—65........	13·09	13·06	− 0·03	14·30	14·24	− 0·06
65—75.......	8·35	8·34	− 0·01	9·08	9·06	− 0·02
75—85.......	4·94	4·94	± 0·00	5·41	5·41	± 0·00
85—	2·79	2·74	− 0·05	3·13	3·11	− 0·02

The results set down in columns (*b*) in the above table were obtained by methods which were, for the time being, more or less tentative, until they had been verified by application to at least one other Life-Table.

This has been done by the writer in the case of the new London Life-Table, and the comparative results obtained, which are set down in Table 3, are sufficiently accurate to render it highly probable that the same methods might be used for other Life-Tables, with confidence that they would produce results equally good.

It may be worth while, therefore, to give an explanation of these methods, which have hitherto been only alluded to very briefly in a paper contributed by the writer to the *Journal of Hygiene*, vol. ii, No. 1.

Explanation of the Shortened Methods of arriving at Values Expressing Mean Expectation of Life in Groups of Ages by which the results given in columns (*b*) *of Tables* 1 *and* 3 *have been obtained.*

In the first place, it is presupposed that a shortened Life-Table has been constructed by which the results given in Table 2, columns (*b*), will have been obtained. Thus:—

The P_0, P_1, P_2, P_3, and P_4 values are taken as already calculated, in the extended Life-Table of Mr. Shirley Murphy.

In working out the E_x values in Table 2, columns (*b*) according to the short method described at the reference already given, commencing with the l_5 value of the extended Life-Table, there have been obtained first of all (by means of the mean $p_{x \text{ to } x+n}$ values calculated for each age-group by the formula $\frac{2P-d}{2P+d}$) the series l_{10}, l_{15}, l_{20}, l_{25}, ... l_{75}, $l_{77\frac{1}{2}}$, l_{80}, $l_{82\frac{1}{2}}$, l_{85}, $l_{87\frac{1}{2}}$, l_{90}, $l_{92\frac{1}{2}}$, l_{95}, l_{96}, l_{97} .... Then the $P_{x \text{ to } x+n}$ column has been obtained by the general formula $P_{x \text{ to } x+n} = \frac{1}{2}(l_x + l_{x+n})$. (For the sake of brevity these numbers are simply denoted in the formula below by the symbol P_x). Next a column, which may be called the $Y_{x \text{ to } x+n}$ column, has been constructed, indicating the years of life lived by $P_{x \text{ to } x+n}$ persons in the interval from x to $x+n$, and in each case

$$Y_{x \text{ to } x+n} = (P_{x \text{ to } x+n}) \times n.$$

Afterwards the Q_x column has been constructed by successive additions of the preceding column, beginning from below, Q_4 .... Q_0 being obtained by successively adding to the Q_5 of the short Life-Table the P_4 .... P_0 values of the extended Life-Table. Lastly, by means of the formula $E_x = \frac{Q_x}{l_x}$ the values of E_0, E_5, E_{10}, E_{15}, E_{25}, ... E_{95}, have been obtained, and then the values of E_{20}, E_{30}, ... E_{90} have been interpolated.

Thus there has been obtained a table in which, in a line with each of the l_x values, there are corresponding $P_{x \text{ to } x+n}$ and Q_x values.

In the case of the first age-group 0—5, the general formula by which the mean expectation of life in an age-group x to $x+n$ is obtained from an extended Life-Table is applicable, viz.:

$$\frac{Q_x + Q_{x+1} \dots + Q_{x+n-1}}{P_x + P_{x+1} \dots + P_{x+n-1}} - \frac{1}{2}.$$

In this instance the intervals into which the age-period is divided are yearly, (hence the "$-\frac{1}{2}$"). If it be desired to apply a corresponding formula to the case where a ten-yearly age-period is divided into *two* parts, it is easily seen that the formula would be

$$\frac{Q_x + Q_{x+5}}{P_x + P_{x+5}} - \frac{5}{2};$$

and in the case of a ten-yearly interval being divided into *four* parts, the formula would be

$$\frac{Q_x + Q_{x+2\frac{1}{2}} + Q_{x+5} + Q_{x+7\frac{1}{2}}}{P_x + P_{x+2\frac{1}{2}} + P_{x+5} + P_{x+7\frac{1}{2}}} - \frac{5}{4}$$

The steps by which the rules to be afterwards given were arrived at were—

(1.) For the earlier age-periods 5—10 .... 25—35, it was found that the arithmetical means of E_x and E_{x+n} gave sufficiently accurate results, except in the case of the age-period 5—10, in which the result was too little. After the age-period 25—35 it was found that the arithmetical means of E_x and E_{x+10} gave results *too little*.

(2.) The results obtained by the above-given formulæ were found to be *too great*, and as it was observed that the corresponding E_{x+5} values were *about as much too little*, the arithmetical mean of $E_{x \text{ to } x+10}$ obtained by formula, and of E_{x+5}, gave the desired result.

Hence the following rules were formulated:—

E_{0-5} is obtained by finding the value of

$$\frac{Q_0 + Q_1 + Q_2 + Q_3 + Q_4}{P_0 + P_1 + P_2 + P_3 + P_4} - \tfrac{1}{2}.$$

E_{5-10} is to be obtained by taking the arithmetical mean of E_5 and E_{10} and adding to this 0·15.[1]

E_{10-15}, E_{15-20}, E_{20-25}, and E_{25-35} can be obtained with sufficient accuracy by taking the arithmetical means respectively of E_{10} and E_{15} . . . . and E_{25} and E_{35}.

For E_{35-45} find the value of $\frac{Q_{35} + Q_{40}}{P_{35} + P_{40}} - 2\tfrac{1}{2}$, and take the arithmetical mean of this and E_{40}.

E_{45-55}, E_{55-65}, and E_{65-75} are to be similarly obtained.

E_{75-85} is to be obtained by finding the value of

$$\frac{Q_{75} + Q_{77\frac{1}{2}} + Q_{80} + Q_{82\frac{1}{2}}}{P_{75} + P_{77\frac{1}{2}} + P_{80} + P_{82\frac{1}{2}}} - 1\tfrac{1}{4},$$

and then taking the arithmetical mean of this and E_{80}.

E_{85-} is to be obtained with sufficient accuracy by finding the value of

$$\frac{Q_{85} + Q_{87\frac{1}{2}} + Q_{90} + Q_{92\frac{1}{2}}}{P_{85} + P_{87\frac{1}{2}} + P_{90} + P_{92\frac{1}{2}}} - 1\tfrac{1}{4},$$

and taking the arithmetical mean of this and E_{90}.

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[1] Based on the London Life-Table only, a nearer approximation to the true value would be obtained by making the rule to add 0·20; but in the similar calculation from the Life-Table for England and Wales, 1881-90, it was found that something between 0·10 and 0·15 would suffice. For the Healthy Districts Life-Table the addition of 0·10 was sufficient. Practically the higher the death-rate at the age-period 5—10, the greater is the amount to be added.

Table 2.—*Comparison of* E_x *Values as given in the London Life-Table for* 1891-1900, *Worked out by Complete or "Extended" Method* (*a*), *with the Corresponding Values arrived at by Modified "Short" Method* (*b*).

	Males.			Females.		
	(*a*).	(*b*).	Differences of (*b*) from (*a*).	(*a*).	(*b*).	Differences of (*b*) from (*a*).
E_0	40·98	40·95	− 0·03	45·33	45·28	− 0·05
E_5	51·60	51·56	− 0·04	55·12	55·04	− 0·08
E_{10}	47·84	47·80	− 0·04	51·49	51·42	− 0·07
E_{15}	43·40	43·35	− 0·05	47·10	47·02	− 0·08
E_{20}	39·13	39·08	− 0·05	42·77	42·66	− 0·11
E_{25}	34·96	34·93	− 0·03	38·46	38·40	− 0·06
E_{30}	30·94	30·96	+ 0·02	34·30	34·28	− 0·02
E_{35}	27·25	27·22	− 0·03	30·42	30·34	− 0·08
E_{40}	23·87	23·82	− 0·05	26·80	26·69	− 0·11
E_{45}	20·65	20·64	− 0·01	23·29	23·21	− 0·08
E_{50}	17·60	17·59	− 0·01	19·91	19·83	− 0·08
E_{55}	14·76	14·73	− 0·03	16·72	16·63	− 0·09
E_{60}	12·14	12·11	− 0·03	13·74	13·70	− 0·04
E_{65}	9·76	9·74	− 0·02	11·01	10·92	− 0·09
E_{70}	7·66	7·66	± 0·00	8·59	8·60	− 0·01
E_{75}	5·91	5·89	− 0·02	6·57	6·52	− 0·05
E_{80}	4·53	4·50	− 0·03	4·97	4·97	± 0·00
E_{85}	3·48	3·43	− 0·05	3·75	3·76	+ 0·01
E_{90} ...	2·69	2·64	− 0·05	2·84	2·83	− 0·01
E_{95}	2·11	2·09	− 0·02	2·16	2·11	− 0·05

Table 3.—*Comparison of* $E_{x \text{ to } x+n}$ *Values* (*Mean Future Lifetime of the Individuals at All Ages from* x *to* $x+n$ *included within the usual Age-Groups*) *Derived from the New Extended Life-Table for London* (*a*), *with Corresponding Values arrived at by a "Short" Method* (*b*).

Age-Groups.	Males.			Females.		
	(*a*).	(*b*).	Differences of (*b*) from (*a*).	(*a*).	(*b*).	Differences of (*b*) from (*a*).
0— 5........	50·16	50·12	− 0·04	53·66	53·60	− 0·06
5—10........	49·89	49·83	− 0·06	53·48	53·38	− 0·10
10—15........	45·61	45·58	− 0·03	49·30	49·22	− 0·08
15—20........	41·26	41·22	− 0·04	44·94	44·84	− 0·10
20—25........	37·05	37·01	− 0·04	40·62	40·53	− 0·09
25—35........	31·05	31·08	+ 0·03	34·39	34·37	− 0·02
35—45........	23·98	23·97	− 0·01	26·89	26·81	− 0·08
45—55........	17·75	17·75	± 0·00	20·04	19·98	− 0·06
55—65........	12·35	12·36	+ 0·01	13·93	13·90	− 0·03
65—75........	7·98	8·01	+ 0·03	8·90	8·92	+ 0·02
75—85........	4·91	4·88	− 0·03	5·37	5·36	− 0·01
85—	3·02	2·93	− 0·09	3·19	3·19	± 0·00

IV.—*The Investigation of Retail Prices.* By George Henry Wood.

No statistical subject has seemingly been so little investigated as the history of retail prices, yet to the student of modern economic history no subject is of more importance. We have now fairly definite information of the course of Average Money Wages, and can tell within not very great limits when they rose and fell; in what years the maxima and minima were reached; we can say when, within one or two years, the lowest point of the nineteenth century was reached; but we cannot, so far, make the corrections necessary for the calculations of changes in average Real Wages. I believe that several students, conscious of this lack of data, are investigating the subject, and it is with the hope of assisting these that the following partial bibliography of printed statements of retail prices has been prepared.

A partial List of Books, &c., containing Statements of Retail Prices.

("S" denotes that the volume is in the Library of the Royal Statistical Society.)

1770-71 Arthur Young, *Six Months' Tour in the North of England.* 4 vols. S.

'74........ " *A Farmer's Tour through the East of England.* S.

'80........ " *Tour in Ireland in .... 1776-79.* (New edition, edited by A. W. Hutton. Bell, London. 2 vols., 8vo., 1892.) S.

Contains a complete list of Arthur Young's writings.

'91-99 *The Statistical Account of the Counties of Scotland.* 21 vols. Edinburgh, 1791-99. S.

Many valuable statements, some retrospective.

'97........ Sir F. M. Eden, *The State of the Poor.* London, 1797. S.

A large amount of material.

'99 ff.... *Agricultural Surveys of English Counties.* S.

All contain statements of prices, especially

- 1799........ A. Young, Lancashire.
- 1799........ " Suffolk.
- 1807........ " Gloucestershire.
- 1808........ " Sussex.
- 1809........ " Oxfordshire.

1805........ Sir John Sinclair, *General View of the Agriculture of Scotland.* S.

'14-15 *Price of the Loaf in London,* 1795-1814. Parliamentary Paper 190 of 1814-15. S.

'27........ *Select Committee on Emigration Report.* Glasgow, 1815 and 1826, p. 65.

'32........ *Tables of the Revenue.* Londonderry, 1823-32. S.

'32........ J. Clayton, *Wages in Hosiery.* Prices for 1792 and 1832.

1834-43	*Statistical Accounts of the Counties of Scotland.* Very valuable. Continues prices of 1791-99 accounts, and contains some retrospective statements.	S.
'34........	*British Almanack and Companion.* Article (by Porter) on wages and prices. Manchester, 1795, 1810-14, 1826-32.	S.
'35........	E. Baines, *History of the Cotton Manufacture.* Manchester, 1810-32.	S.
'38-40	*Commission on Handloom Weavers.* Especially vol. iv. Prices, Glasgow, 1813, 1818, and 1831, and other places, 1836-38.	S.
'39........	R. Edmonds, *Statistical Account of Penzance. Journal of the Statistical Society*, 1839. Prices in Penzance, 1746-70, 1794, &c.	S.
'42........	H. Ashworth, *Past and Present State of Lancashire . . . , and Salford. Journal of the Statistical Society*, 1842.	S.
'44 and later....	J. R. McCulloch, *Commercial Dictionary.* Article "Prices." Contract prices at Greenwich Hospital, continued in later editions.	S.
'50........	G. R. Porter, *Comparative Statement of Prices and Wages during* 1842-49. *Journal of the Statistical Society*, 1850. Prices in London and Birmingham, 1842-49.	S.
'51........	Meidinger, *The British Empire in Europe* (in German). Price of household bread, 1821-47.	S.
'52........	Bashley Britten, *Statistical Chart.* Bury St. Edmunds, 1773, 1793, 1799, 1800.	S.
'53........	*The Extent and Causes of our Prosperity. Blackwood's Magazine*, September, 1853. Prices in 1851 and 1853 compared.	
'60........	D. Chadwick, *The Rate of Wages in Lancashire. Journal of the Statistical Society*, 1860. Manchester, 1839, 1849, 1859.	S.
'60........	F. Purdy, *Agricultural Wages in Scotland and Ireland. Journal of the Statistical Society*, 1860. Arbroath, 1812, 1819, 1826, 1833, and other places, 1836-37.	S.
'70-1902	*Wright's Time Table, Bristol.* An exhaustive monthly price list.	
'72........	T. Brassey, *Work and Wages.* Prices in Staffordshire, 1849-69.	S.
'75........	J. Noble, *National Finance.* London, 1848 and 1874. Manchester, 1836, 1841, and 1875.	S.
'78........	E. Young, *Labour in Europe and America.* Washington. Prices in large towns, 1872-73.	S.
'78........	Sir James Caird, *The Landed Interest and the Supply of Food.* 1770, 1850, 1878.	S.
'79........	*U.S.A. Consular Reports.* State of Labour in Europe. Prices in 1878 in Consular districts.	S.
'81........	*Typographical Circular* (monthly organ of the Typographical Society). Prices in London, 1793, 1800, and 1809.	

1882........ *Wages in the United States and Foreign Countries.* U.S.A. Consular Report. Washington. S.
Budget for 1881, comparing with Chadwick's, 1860.

'84........ Robert Montgomery, *Presidential Address to Manchester Statistical Society.* S.
Prices at Manchester Workhouse and Infirmary, 1834 and 1844.

'84........ E. V. Neale, *Condition of the Working Classes. Social Science Transactions*, 1884. S.
Chadwick's 1860 figures continued to 1884.

'85........ *U.S.A. Consular Reports.* Labour in Europe. 2 vols. S.
Prices, 1884, compared with Young, 1878, and Reports, 1879.

'87........ David Chadwick, *Expenditure of Wages.* Read to British Association, but not printed in the Report. The prices are given in Schulze-Gaevernitz below.

'88........ R. E. Protheroe, *The Pioneers and Progress of British Farming*, 1768, 1815, 1836, 1860, 1887.

'89........ C–5861. *Expenditure of Working Men.* S.
Contains selections from the account book of a cabinet maker of prices in 1863, 1865-69, 1872, 1877-78, 1886.

'92........ C. Booth, *Life and Labour of the People of London.* Vol. i. S.
Prices in London, 1887.

'93........ Labour Commission, *Report on the Agricultural Labourer.* S.
Scotland ii. C–6894, xvi.
Prices in Fifeshire, 1871 and 1892.

'93-1902 *Labour Gazette*, prices of goods sold by Cooperative Societies. S.
Especially November, 1896; September, 1897; May, 1898; October, 1898; April, 1899.

'93........ I. S. Leadam, *What Protection does for the Farmer and the Labourer.* S.
Bread prices, 1839, 1849, 1859, 1887, 1893, p. xxii.

'94........ *Full Report of the Commission of Inquiry into .... the Unemployed in .... Liverpool.*
Comparisons of 1874, 1884, and 1894.

'94........ A. Williamson, *British Industries and Foreign Competition.*
Greenwich Hospital. Bread prices, 1836-84.
bread prices, pp. 183—6.

'94........ A. Toynbee, *Lectures on the Industrial Revolution.* S
Budgets, 1839 and 1875.

'95........ G. von Schulze-Gaevernitz, *The Cotton Trade in England and on the Continent.* Translated by O. S. Hall. S.
Cooperative prices, Darwen, 1883-91.

'96........ F. W. Galton, *Select Documents .... Tailoring Trade.* S.
Bread, 1777-1817. Contained also in the Gorgon, October, 1818. British Museum, P.P. 3557.

'99........ Ernst Duckershoff, *How the English Workman Lives.* S.
Prices, Newcastle, p. 36.

'99........ G. H. Wood, *The Course of Average Wages between* 1790 and 1860. Index numbers. *British Association Report.* Section F. S

1900........ G. H. Wood, *A Glance at Wages and Prices since the Industrial Revolution. Cooperative Wholesale Society's Annual*, 1900. S.
Budgets with prices, 1790, 1810, 1824, 1840, 1850, 1872-73, 1887, 1899. Bread, 1849-99, various years.

'01........ B. S. Rowntree, *Poverty: A Study of Town Life.* S.
York prices, 1901.

For the principles on which index numbers of retail prices should be constructed, and the difficulties to meet, see A. L. Bowley, *Elements of Statistics*, pp. 225—227, and Palgrave, *Dictionary of Political Economy*, Article, "Wages, nominal and real," by A. L. Bowley. An index number of retail prices in New South Wales, giving illustrations of results by different methods, is given in the *Journal of the Royal Statistical Society* for December, 1901.

As an indication of the material which is to be found in these publications, I give the prices of bread in London.

Average of the Quartern Loaf for the Year. (P. P. 190 of 1814-15.)
Assize of Bread, London.
(*d.* per 4 loaf.)

	1781.	'82.	'83.	'84.	'85.	'86.	'87.	'88.	'89.	'90.	'91.	'92.
	d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
Wheaten....	7½	7¾	7¾	7¾	7	6¼	6¼	6½	7½	7½	6¾	6½
Household	5½	5¾	5¾	5¾	5¼	4½	4¾	5	5¾	5½	5¼	5

	1793.	'94.	'95.	'96.	'97.	'98.	'99.	1800.	'01.	'02	'03.
	d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
Wheaten....	7¼	7½	10¼	10½	8¼	8½	10½	16¾	16¾	10¼	9½
Household	5½	5½	8	8	6½	7	9	15¼	15¼	8¾	8

	1804.	'05.	'06.	'07.	'08.	'09.	'10.	'11.	'12.	'13.	'14.	'15.
	d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
Wheaten....	10½	14	12¾	11¾	12½	15	16	15¼	18	16¾	12½	11¾
Household	9	12½	11¼	10½	11	13½	14½	13¾	17	15¼	11	10¼

Meidinger (*Das Britische Reich in Europa*, 1851), gives the price of household bread only, as follows :—

1821.	'22.	'23.	'24.	'25.	'26.	'27.	'28.	'29.	'30.	'31.	'32.	'33.
d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
9½	9½	10¼	10½	10¼	9½	9½	9½	10½	10½	10	10	8½

1834.	'35.	'36.	'37.	'38.	'39.	'40.	'41.	'42.	'43.	'44.	'45.	'46.	'47.
d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
8	7	8	8½	10	10	10	9	9½	7½	8½	7½	8½	11½

These prices are the same as given by Porter, who gives for 1848, 7½*d.*, and 1849, 7*d.* The table in Galton, *The Tailoring Trade* (quoted from the Gorgon, 1818, and due to Francis Place), is:—

1777-95.	'95.	'96.	'97.	'98.	'99.	1800.	'01.	'02.	'03.
d. 7¼	*d.* 12¾	*d.* 8½	*d.* 9½	*d.* 8½	*d.* 9	*d.* 16	*d.* 17½	*d.* 10½	*d.* 9½

1804.	'05.	'06.	'07.	'08.	'09.	'10.	'11.	'12.	'13.	'14.
d. 9½	*d.* 14½	*d.* 12½	*d.* 12	*d.* 12	*d.* 14½	*d.* 16	*d.* 14¾	*d.* 18¼	*d.* 17¾	*d.* 12½

and in the same place the price is given as 1834, 9½*d.*

A pamphlet in the Statistical Society's collection, entitled, *What should be the Price of Bread*, 1855? says the price "now ruling" is from 8*d.* to 9½*d.*, and some even 11*d.* A correspondent writing to the *Morning Leader*, 19th October, 1899, remembers 1*s.* 2*d.* per quartern to have been the price paid during the Crimean War. This was probably before 1855.

Our next account is from the account book of a cabinet maker, given in C–5861 of 1889:—

1863.	'65.	'66.	'67.	'68.	'69.	'72.	'78.	'86.
d. 6	*d.* 6	*d.* 8	*d.* 9	*d.* 7	*d.* 6	*d.* 8	*d.* 6½	*d.* 5½

and in I. S. Leadam's pamphlet, Mr. David Chadwick is quoted as saying the price in 1893 was 5½*d.* There was a rise in 1897, and a "Special Commissioner" of the *Morning Leader* says (31st August, 1897) the prices were:—

North of Holborn	6¼*d.*	S. and E. London	6*d.*, some 5½*d.*
King's Cross	6*d.* and 6½*d.*	West End	7*d.*

The Greenwich Hospital accounts from McCulloch and Williamson are:—

(*McCulloch.*)
(*d.* per lb.)

1818.	'19.	'20.	'21.	'22.	'23.	'24.	'25.	'26.	'27.	'28.	'29.
d. 3·5	*d.* 1·95	*d.* 2·83	*d.* 1·52	*d.* 1·42	*d.* 1·5	*d.* 1·6	*d.* 1·85	*d.* 1·56	*d.* 1·56	*d.* 1·7	*d.* 2·05

1830.	'31.	'32.	'33.	'34.	'35.	'36.	'37.	'38.	'39.	'40.	'41.	'42.
d. 1·89	*d.* 2·72	*d.* 1·96	*d.* 1·07	*d.* 1·33	*d.* 1·71	*d.* 1·61	*d.* 1·44	*d.* 1·67	*d.* 1·88	*d.* 1·86	*d.* 1·89	*d.* 1·66

(*Williamson.*)
(Average prices per 4 lb. loaf.)

1836.	'37.	'38.	'39.	'40.	'41.	'42.	'43.	'44.	'45.	'46.	'47.
d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
5	5½	7	7	7¾	7¼	7¾	6	7	6	7	8½

1848.	'49.	'50.	'51.	'52.	'53.	'54.	'55.	'56.	'57.	'58.	'59.
d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
6½	6¼	5½	5	5	6	9¾	8¾	9	8	6¼	5½

1860.	'61.	'62.	'63.	'64.	'65.	'66.	'67.	'68.	'69.	'70.	'71.
d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
6	7¼	7¼	6½	5¾	5½	6	8	8½	6¼	6	6¼

1872.	'73.	'74.	'75.	'76.	'77.	'78.	'79.	'80.	'81.	'82.	'83.	'84.
d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
6¼	6¼	6¼	6	5¾	6	6¾	5¼	5½	6¼	6	5¾	4½

These prices are not strictly comparable, and contract prices at institutions are not likely to move in exactly the same proportion as retail prices paid by the small consumer, but they serve to indicate the direction which prices have taken. In the absence of continuous records, the only ground on which we might rely on the correctness of an index number of retail prices is the balancing of errors in a large number of quotations, and almost as large a mass of material is required for this purpose as for the construction of wages index numbers. In the case of some towns, we get prices for perhaps twelve or twenty years through the century. For Manchester, statements for thirty-three separate years are found in the sources mentioned above. For recent years, personal inquiry would probably result in continuous lists being obtained, and I have already by this means obtained lists of prices during the past decade in one or two places. Housekeepers' books and local price lists would also afford valuable material, if they can be obtained for a series of years. Coal prices are regularly advertised in London and local newspapers, and from these there should be little difficulty in procuring approximate index numbers of coal per ton. The prices of smaller quantities present a greater difficulty, but even these change closely with the price for a ton.

In view of the importance of obtaining an index number of retail prices, I would venture to ask anyone discovering other sources of material, or students investigating the problem, to communicate with me through the Editor of the *Journal*.

V.—*The Report of the Committee appointed to Inquire into the Existing Arrangements for the Collection and Custody of Local Records, and as to the further Measures which it may be advisable to take for the purpose.* Parliamentary Paper Cd-1335.

It is fifty-two years since the Rev. E. Wyatt Edgell, in a paper read before the Royal Statistical Society, called attention to the urgent need which exists for the taking of some strong measures for the preservation of one class of local records, viz., the parish registers. He pointed out how, for births, marriages, and deaths which have taken place since the year 1837, the General Register Office at Somerset House affords ample evidence in supplement of that which the parish records themselves contain. But at the time Her late Majesty came to the throne—for it was in the year of her accession that the General Register Office was instituted—there were already no less than 11,000 parish churches each of which had its own separate register. It is computed that there are from 50 to 100 millions of entries in these older books, and of these the General Register Office has no record. Mr. Wyatt Edgell's purpose was to urge that something should be done to secure these records from loss. But as yet no steps have been taken to do anything systematic in that direction. Moreover, the parish registers, important though they be, are by no means the only historical documents which should be comprehended in the expression "local records." One of the tasks which the Committee, to whose report we would draw attention, had to set itself was to define what should be included in the term, and one of the appendices to their report consists of a letter from the Cambridge Antiquarian Society, where is set out, not, indeed, a list of documents which should be included in the term—that would, perhaps, be too large a task—but merely a list of the depositories of such records in that one not very large county. The list is a formidable one enough, and its perusal clearly shows at once the need for something to be done, and the difficulties which beset the Committee in making any suggestions for doing it. The various authorities in Cambridgeshire are so diverse, and so really important in their respective spheres, that they could hardly be expected to part with their antiquarian treasures, even for safe keeping in the custody of another. The colleges would not hand over their muniments to one another or to the University. The University and the town would not co-operate in such a matter, nor would the urban and county authorities agree any better. This difficulty might be emphasised even more strongly than is done in the Report. We have an example of what can be done in this direction in the grouping of the Central Records at the Rolls Chapel in Chancery Lane. But the difficulties that had to be met there were nothing to those which affect the present problem, since the Central Office contains chiefly papers which belong to a single owner, the Crown. So long as the papers remained in a proper place, easily available, the keenest stickler for the rights of his department could hardly oppose such centralisation. But Londoners are not wont to appreciate the full strength of local jealousies, or the attachment with which parishioners regard the old registers of their parish church. They may not, it is true, be willing to pay for a proper receptacle, or for making their contents available to the student by a costly system of indexing: but they would not like to see them go out of the parish, though they may be fully aware that, apart from the risks of fire and damp, there is a chance that at the death of the incumbent they may be lost, or destroyed with his personal papers. The Committee is against the resort to local public libraries, and that for several reasons: neither buildings nor custodians are in their view suitable for the duty. The suggestion is that local repositories should be organised, and that the county towns should be the centres for their districts, the responsible authorities being the County Councils. The boroughs would be kept apart, and either keep their own muniments themselves, or form groups for the purpose of convenience and economy. This as regards ordinary civil records. For ecclesiastical records the cathedral town would be the proper centre, but for the old parish registers there might need to be a special arrangement in individual cases. Where there was a strong local feeling against the removal of the original volumes to the local centre, it might be necessary to allow them to remain, and to have an authenticated transcript of their contents preserved in the diocesan and archidiaconal registries.

A very careful and interesting examination of the practice in France is set out by the Committee. But, as they explain, we are not in a position in this country to carry out the very sweeping measures which the adoption of their system would involve. One thing, however, might very well be copied from the French practice: it appears that in France every custodian of ancient records must have studied in the Ecole des Chartes, and have one of its diplomas. The mere preservation of ancient records, though desirable enough, is largely sentimental. What is needed to make these mines of information as to our individual and national history available, is to have all these records catalogued and indexed, so that they may be in a true sense accessible to the student. When such work is undertaken, it is highly desirable that a uniform system should be adopted, and that a similar practice should be followed by the custodians of all our depositories. Presumably the main lines of the Central Record Office, in so far as they may be applicable, should form the basis of the system. But details would have to be adapted to suit the peculiarities of each class of documents. Evidently there is need of some Society which should undertake in this country to fulfil the duties of the French Ecole des Chartes in this regard. But for the rest the Committee shows clearly enough the urgency of taking some decided steps to preserve our records, though it does not disguise the difficulties which would attend any attempt to do that which must inevitably be done some day, and which ought to be done without any delay.

VI.—*Agricultural Returns*, 1902 (*Acreage and Live Stock*).

THESE tables, published by the Board of Agriculture in October, in advance of their publication in the annual volume of the *Agricultural Statistics for* 1902, supply the complete information collected as to the extent and distribution of the cultivated land,

and the number and classes of live stock in the several divisions of the United Kingdom. In a prefatory memorandum it is remarked that in comparing the returns of the acreage under various crops in Great Britain with those for 1901 and preceding years, a net gain of 1½ per cent. in the area under Wheat will be seen to have followed the much more considerable reductions in the two years immediately preceding. The total acreage under wheat in Great Britain—1,726,473 acres—is the smallest recorded in any year with three exceptions, viz.:—1895, 1896 and 1901. The acreage sown with barley showed a reduction by 63,065 acres, or 3·2 per cent. The total area under this crop is smaller than in any recorded year except 1898, while on the other hand the increase by 60,301 acres of the acreage under oats raises the area devoted to that crop to a higher level than in any year since 1896. The area under beans showed a small reduction, while that under peas exhibited an appreciable increase, amounting to 16 per cent. on the relatively small figures of that crop. There was no material change in the total extent of land devoted to potatoes, which still remains very nearly at the high figure returned in 1901. The reduction of the acreage under turnips and swedes, which has occurred annually since 1893, was continued this year, a loss of 3½ per cent., or 56,000 acres, being recorded. During the past nine years the turnip area in England has diminished by more than 23 per cent., while in Scotland the diminution during the same period has amounted to only 5 per cent. There was a general increase in the acreage under mangolds, which now stands at a higher figure than in any previous year. The tendency to place less reliance upon turnips and more upon other root and fodder crops is further indicated by the relatively large increase in the small acreage under kohl rabi, and in this connection attention is called to the still growing popularity of Lucerne. The area of clovers and rotation grasses set apart for hay was slightly larger than in the preceding year, but this was more than counterbalanced by a greater reduction in the acreage not cut for hay. The total area returned as under permanent grass showed a fractional and insignificant reduction, but there was a substantial transference this year from the "non-hay" to the "hay" category. The reduction by 51,000 acres, or nearly 15 per cent., in the extent of bare fallow in Great Britain, reduces the total uncropped arable land for the first time on record below 300,000 acres. The acreage of hops fell by 6 per cent. on the year, and was also the smallest recorded since official returns have been collected. On the other hand, the area returned as under small fruit was larger than that returned in any year except 1896.

Turning to live stock, the returns showed a general decrease in the number of horses, cattle and sheep. A reduction of agricultural horses by 13,000 was accompanied by an increase by about half that number of unbroken horses, so that it would seem that there has been some increased attention directed to horse-breeding. The reduction by 3 per cent. in the number of cattle, follows unfortunately upon a similar though much smaller decline last year. Since the relatively largest decrease, of nearly 7 per cent., occurs in the number of two year and older cattle other than milking cows, it may fairly be assumed that these went to make up the deficiency in the supplies of meat from Australia and the United States.

The rise in the price of beef may also partly account for the falling off in the other classes of cattle, though probably the unusual scarcity of keep in the spring may have been the predominant reason for sending a number of cows and unfinished beasts to the butcher at a somewhat earlier date than usual. The falling off by nearly 2 per cent. of the cows and heifers in milk and in calf in Great Britain reduces the milking herd of the country to smaller dimensions than in any year since 1897. There was a further decline of 611,000 in the number of sheep returned in Great Britain, which, following upon reductions of 215,000 last year and of 646,000 in 1900, has reduced the flocks of this country to a total lower than in any year since 1899. The increase by 120,000 of the number of pigs, and particularly the addition of 9 per cent. to the sows kept for breeding, indicate a revival of pig breeding.

Produce of Crops. Preliminary Statement showing the Estimated Total Produce and Yield per Acre of the Principal Crops in Great Britain in the Year 1902, *with Comparisons for* 1901, *and the Average Yield per Acre of the Ten Years* 1892-1901.

	Estimated Total Produce.		Acreage.		Average Estimated Yield per Acre.		Average of the Ten Years 1892-1901.
	1902.	1901.	1902.	1901.	1902.	1901.	
	WHEAT.						
	Bushels.	Bushels.	Acres.	Acres.	Bushels.	Bushels.	Bushels.
England	53,529,442	49,882,667	1,630,892	1,617,721	32·82	30·84	29·86
Wales	1,348,064	1,156,673	48,206	46,882	27·96	24·67	24·33
Scotland	1,799,277	1,418,262	47,258	36,225	38·07	39·15	37·29
Great Britain.	56,676,783	52,457,602	1,726,356	1,700,828	32·83	30·84	29·89
	BARLEY.						
England	54,947,154	49,557,593	1,579,027	1,635,426	34·80	30·30	32·62
Wales	3,410,196	3,016,334	101,326	101,907	33·66	29·60	30·28
Scotland	8,137,256	8,533,696	229,080	235,115	35·52	36·30	35·93
Great Britain.	66,494,606	61,107,623	1,909,433	1,972,448	34·82	30·98	32·81
	OATS.						
England	87,065,205	67,863,053	1,892,554	1,831,740	46·00	37·05	39·91
Wales	7,681,445	6,490,336	210,153	208,773	36·55	31·09	33·00
Scotland	35,637,032	35,752,141	954,333	956,389	37·34	37·38	36·41
Great Britain.	130,383,682	110,105,530	3,057,040	2,996,902	42·65	36·74	38·26
	BEANS.						
England	7,131,349	5,601,920	228,196	237,102	31·25	23·63	25·81
Wales	31,245	26,374	1,222	1,212	25·57	21·76	23·79
Scotland	438,881	438,754	12,913	12,766	33·99	34·37	32·52
Great Britain.	7,601,475	6,067,048	242,331	251,080	31·37	24·16	26·15

Produce of Crops. Preliminary Statement for Great Britain for 1902—*Contd.*

PEAS.

	Estimated Total Produce.		Acreage.		Average Estimated Yield per Acre.		Average of the Ten Years
	1902.	1901.	1902.	1901.	1902.	1901.	1892-1901.
	Bushels.	Bushels.	Acres.	Acres.	Bushels.	Bushels.	Bushels.
England	5,039,552	3,946,977	176,276	151,617	28·59	26·03	25·69
Wales	27,434	30,812	1,376	1,578	19·94	19·53	19·36
Scotland	28,327	28,883	1,092	1,106	25·94	26·11	24·91
Great Britain.	5,095,313	4,006,672	178,744	154,331	28·51	25·96	25·63

POTATOES.

	Estimated Total Produce.		Acreage.		Average Estimated Yield per Acre.		Average of the Ten Years
	1902.	1901.	1902.	1901.	1902.	1901.	1892-1901.
	Tons.	Tons.	Acres.	Acres.	Tons.	Tons.	Tons.
England	2,225,569	2,627,647	412,739	415,105	5·39	6·33	6·02
Wales	155,508	182,122	31,446	31,979	4·95	5·70	5·72
Scotland	813,111	861,481	129,695	130,176	6·27	6·62	5·61
Great Britain.	3,194,188	3,671,250	573,880	577,260	5·57	6·36	5·92

TURNIPS AND SWEDES.

	Estimated Total Produce.		Acreage.		Average Estimated Yield per Acre.		Average of the Ten Years
	1902.	1901.	1902.	1901.	1902.	1901.	1892-1901.
England	16,023,633	12,449,535	1,092,019	1,144,035	14·67	10·88	11·88
Wales	1,005,208	946,536	60,928	61,934	16·50	15·28	14·77
Scotland	7,140,609	7,018,110	455,785	458,556	15·67	15·30	14·95
Great Britain.	24,169,450	20,414,181	1,608,732	1,664,525	15·02	12·26	12·79

MANGOLD.

	Estimated Total Produce.		Acreage.		Average Estimated Yield per Acre.		Average of the Ten Years
	1902.	1901.	1902.	1901.	1902.	1901.	1892-1901.
England	9,072,616	7,542,694	426,048	386,044	21·29	19·54	17·56
Wales	198,242	176,398	10,820	9,811	18·32	17·98	16·21
Scotland	76,554	55,181	4,590	2,950	16·68	18·71	17·52
Great Britain.	9,347,412	7,774,273	441,458	398,805	21·17	19·49	17·52

HAY FROM CLOVER, SAINFOIN, &C.

	Estimated Total Produce.		Acreage.		Average Estimated Yield per Acre.		Average of the Ten Years
	1902.	1901.	1902.	1901.	1902.	1901.	1892-1901.
	Cwts.	Cwts.	Acres.	Acres.	Cwts.	Cwts.	Cwts.
England	57,123,299	42,492,701	1,737,608	1,730,155	32·87	24·56	26·68
Wales	5,920,302	4,030,483	208,798	201,943	28·35	19·96	22·55
Scotland	13,878,813	13,521,389	417,896	424,317	33·21	31·87	31·73
Great Britain.	76,922,414	60,044,573	2,364,302	2,356,415	32·53	25·48	27·26

HAY FROM PERMANENT PASTURE.

	Estimated Total Produce.		Acreage.		Average Estimated Yield per Acre.		Average of the Ten Years
	1902.	1901.	1902.	1901.	1902.	1901.	1892-1901.
England	110,467,298	62,142,295	3,975,088	3,754,836	27·79	16·55	21·73
Wales	10,029,186	6,498,745	473,894	463,704	21·16	14·01	17·45
Scotland	3,967,753	3,680,362	131,521	131,562	30·17	27·97	28·74
Great Britain.	124,464,237	72,321,402	4,580,503	4,350,102	27·17	16·63	21·52

Note.—The preliminary statement of the produce of hops for 1902, issued on the 21st October, showed a total estimated produce of 311,041 cwts., being an estimated yield per acre of 6·48 cwts.

BOARD OF AGRICULTURE, *3rd December*, 1902.

Agricultural Returns of the United Kingdom for 1902. *Acreage under Crops and Grass; and 4th June,* 1901, *in each Division of Great Britain; with*

	England.		Wales.		Scotland.	
	1902.	1901.	1902.	1901.	1902.	1901.
	Acres.	Acres.	Acres.	Acres.	Acres	Acres.
Total area of land and water[b]	32,550,537	32,550,537	4,777,133	4,777,133	19,458,503	19,458,503
Total acreage under crops and grass[c]	24,679,966	24,694,252	2,810,824	2,823,062	4,897,169	4,900,131
Corn Crops—						
Wheat	1,630,892	1,617,721	48,323	47,019	47,258	36,225
Barley or bere	1,578,977	1,635,426	101,326	101,907	229,080	235,115
Oats	1,892,717	1,831,740	210,153	208,773	954,333	956,389
Rye	61,241	49,649	1,341	1,460	5,797	5,541
Beans	228,548	237,361	1,235	1,216	13,318	13,037
Peas	176,827	152,185	1,426	1,596	1,498	1,349
Total	5,569,202	5,524,082	363,804	361,970	1,251,284	1,247,656
Green Crops—						
Potatoes	412,739	415,105	31,446	31,979	129,695	130,176
Turnips and swedes	1,092,019	1,144,035	60,928	61,934	455,785	458,556
Mangold	426,048	386,044	10,820	9,811	4,590	2,950
Cabbage, kohl-rabi, and rape	176,037	161,727	4,470	4,194	12,754	14,404
Vetches or tares	162,034	147,186	1,334	1,344	8,782	9,016
Other crops	154,857	147,168	1,120	1,217	2,430	2,384
Total	2,423,734	2,401,265	110,118	110,479	614,036	617,486
Clover, sainfoin, and grasses under rotation—						
For hay	1,737,608	1,730,155	208,798	201,943	417,896	424,317
Not for hay	1,087,307	1,132,503	196,792	198,325	1,183,497	1,169,144
Total	2,824,915	2,862,658	405,590	400,268	1,601,393	1,593,461
Permanent pasture or grass not broken up in rotation—[e]						
For hay	3,975,088	3,754,836	473,894	463,704	131,737	131,919
Not for hay	9,488,340	9,702,824	1,450,473	1,477,661	1,286,976	1,296,305
Total	13,463,428	13,457,660	1,924,367	1,941,365	1,418,713	1,428,224
Flax	824	630	8	6	3	4
Hops	48,031	51,127	—	—	—	—
Small fruit	68,263	67,828	1,203	1,092	5,912	6,079
Bare fallow	281,569	329,002	5,734	7,882	5,828	7,221
	No.	No.	No.	No.	No.	No.
Horses used solely for agriculture[d]	832,065	843,624	91,293	91,876	152,812	153,918
Unbroken horses—						
1 year and above	226,803	223,430	41,733	41,504	30,070	29,228
Under 1 year	96,493	94,860	21,088	21,244	12,432	11,747
Total of horses	1,155,361	1,161,914	154,114	154,624	195,314	194,893
Cows and heifers in milk or in calf	1,841,356	1,887,414	275,880	280,899	438,890	433,981
Other cattle—						
2 years and above	988,221	1,059,495	93,088	94,472	251,053	274,016
1 year and under 2	920,253	944,205	174,146	179,914	291,377	283,531
Under 1 year	862,107	900,421	178,760	187,793	240,845	237,750
Total of cattle	4,611,937	4,791,535	721,874	743,078	1,222,165	1,229,281
Ewes kept for breeding	5,680,519	5,845,407	1,371,949	1,364,078	2,946,703	2,952,345
Other sheep—						
1 year and above	3,133,022	3,420,482	837,127	845,693	1,553,561	1,674,721
Under 1 year	6,220,938	6,282,168	1,253,622	1,217,963	2,768,265	2,774,343
Total of sheep	15,034,479	15,548,057	3,462,698	3,427,734	7,268,529	7,401,409
Sows kept for breeding	295,237	268,909	36,826	35,446	16,937	15,369
Other pigs	1,660,921	1,573,224	178,457	177,525	111,189	109,452
Total of pigs	1,956,158	1,842,133	215,283	212,971	128,126	124,821

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[a] Furnished by the Department of Agriculture and Technical Instruction for Ireland.

[b] Not including mountain and heath land.

and Number of Horses, Cattle, Sheep, and Pigs; as returned upon the 4*th June*, 1902, *Particulars for Ireland, and Total for the United Kingdom.*

Great Britain.		Ireland.[a]		United Kingdom, including Isle of Man and Channel Islands.		
1902.	1901.	1902.	1901.	1902.	1901.	
Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
56,786,173	56,786,173	20,706,258	20,706,258	77,678,185	77,678,185	Total area of land and water[b]
32,387,959	32,417,445	15,240,164	15,219,175	47,752,773	47,760,585	Total acreage under crops and grass[c]
						Corn Crops—
1,726,478	1,700,965	44,471	42,934	1,773,067	1,746,155	Wheat
1,909,353	1,972,448	167,879	161,684	2,083,016	2,140,908	Barley or bere
3,057,203	2,996,902	1,081,751	1,099,335	4,156,686	4,112,297	Oats
68,379	56,650	9,634	11,001	78,160	67,752	Rye
243,101	251,613	2,317	2,254	245,655	254,096	Beans
179,751	155,130	346	366	180,291	155,668	Peas
7,184,290	7,133,708	1,306,398	1,317,574	8,516,875	8,476,876	Total
						Green Crops—
573,880	577,260	629,481	635,321	1,214,752	1,223,734	Potatoes
1,608,732	1,664,525	288,421	289,759	1,905,168	1,962,157	Turnips and swedes
441,458	398,805	77,010	77,283	619,296	476,827	Mangold
193,261	180,325	46,089	47,898	239,636	228,464	Cabbage, kohl-rabi, and rape
172,150	157,546	3,075	3,434	175,574	161,349	Vetches or tares
158,407	150,769	26,373	25,748	186,719	178,445	Other crops
3,147,888	3,129,230	1,070,449	1,079,443	4,241,165	4,231,026	Total
						Clover, sainfoin, and grasses under rotation—
2,364,302	2,356,415	603,375	617,330	2,981,988	2,987,790	For hay
2,467,596	2,499,972	625,123	616,440	3,126,752	3,152,941	Not for hay
4,831,898	4,856,387	1,228,498	1,233,770	6,108,740	6,140,731	Total
						Permanent pasture or grass not broken up in rotation—[c]
4,580,719	4,350,459	1,565,448	1,561,262	6,151,953	5,916,670	For hay
12,225,789	12,476,790	10,010,067	9,960,798	22,256,497	22,457,318	Not for hay
16,806,508	16,827,249	11,575,515	11,522,060	28,408,450	28,373,988	Total
835	640	49,746	55,442	50,581	56,082	Flax
48,031	51,127	—	—	48,031	51,127	Hops
75,378	74,999	4,311	4,877	80,387	80,475	Small fruit
293,131	344,105	5,247	6,009	298,544	350,280	Bare fallow
No.	No.	No.	No.	No.	No.	
1,076,170	1,089,418	358,314	354,750	1,441,377	1,451,131	Horses used solely for agriculture[d]
						Unbroken horses—
298,606	294,162	81,897	73,691	381,880	369,120	1 year and above
130,013	127,851	69,073	62,989	199,706	191,460	Under 1 year
1,504,789	1,511,431	509,284	491,430	2,022,963	2,011,701	Total of horses
2,556,126	2,602,294	1,610,701	1,482,483	4,084,305	4,102,061	Cows and heifers in milk or in calf
						Other cattle—
1,332,362	1,427,983	1,077,615	1,041,506	2,414,465	2,474,735	2 years and above
1,385,776	1,407,653	1,067,725	1,046,203	2,462,119	2,463,645	1 year and under 2
1,281,712	1,325,964	1,126,163	1,103,131	2,416,080	2,437,383	Under 1 year
6,555,976	6,763,894	4,782,204	4,673,323	11,376,969	11,477,824	Total of cattle
9,999,171	10,161,830	1,653,290	1,691,506	11,682,787	11,883,439	Ewes kept for breeding
						Other sheep—
5,523,710	5,940,896	845,834	894,945	6,378,685	6,845,246	1 year and above
10,242,825	10,274,474	1,716,616	1,792,299	11,995,159	12,101,204	Under 1 year
25,765,706	26,377,200	4,215,740	4,378,750	30,056,631	30,829,889	Total of sheep
349,000	319,724	141,625	130,580	492,600	452,050	Sows kept for breeding
1,950,567	1,860,201	1,185,967	1,088,555	3,147,164	2,959,079	Other pigs
2,299,567	2,179,925	1,327,592	1,219,135	3,639,764	3,411,129	Total of pigs

[b] Not including foreshore and tidal water.

[d] Including mares kept for breeding.

VII.—*Note on the Association of American Railway Accounting Officers.* By S. Chapman.

Mr. Acworth referred in his paper to the Association of American Railway Accounting Officers. In view of the fact that the work of this Association is but little known on this side of the Atlantic, the following extracts may be of some interest:—

1. *Regarding the Objects of the Association.*[1]

The object of the Association shall be the furthering of the best interests of the companies represented by it, and shall have no other purpose. Its object shall be the better organisation and conduct of the accounts of carriers, and the securing to them of the advantages that should follow the interchange of ideas and experiences among its members; to aid in securing more perfect means of determining balances between carriers, and greater definiteness and promptness in paying the same; greater uniformity in method of adjusting joint accounts; more equitable plans for settling claims between carriers; greater certainty and promptness in collecting freight charges at competing points; better means of adjusting balances at junctions where freight is re-billed; the obtaining of greater uniformity wherever practicable in the governmental returns required of railroads; the greater enlightenment of those who belong to it; the more general systemization of railway accounts; and, finally, the benefiting of railways in every proper way that comes within the scope of such an Association.

2. *The Progress of its Work.*[2]

When this convention first assembled, there was little uniformity in the schedules of questions presented by the various commissioners of railroads for report from the carriers. At the present time there exists substantial uniformity, and as a result the carriers exhibit greater care in making out these reports. A second step towards uniformity was taken in connection with the classification of operating expenses. So far as operating accounts are concerned, your committee feel confident that progress towards uniformity is as rapid as could be expected, and no further action is recommended at this time.

A third step in the perfecting of statistical methods consisted in the abandonment of the attempt to secure the cost per ton per mile and the cost per passenger per mile; that is to say, in the abandonment of the separation of operating expenses into expenses incident to the freight and to the passenger service. This was done because it was believed by the committee and by the convention, that the results attained rested in too large a degree upon estimates to be worthy of confidence.

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[1] This is an extract from the report of the Committee on Railway Statistics, signed by Professor Adams and his colleagues, and read at the New York meeting of the Accountants' Association in May, 1896.

[2] This extract is taken from the constitution of the Association.

A review of the development of railway statistics since the first meeting of this convention in 1889, leads your committee to the conviction that the time has come when Congress and the Legislatures of the various States must take a comprehensive view of the relation of bureaus of railway statistics and accounts to the solution of the general problem of transportation. It is believed that the chief difficulty in executing the laws for the control of railways at present upon the statute books of the Federal Government and the various States, is due to the inability of commissions to arrive easily, quickly and certainly at facts. This difficulty can not be remedied, except the accounting divisions of the railways be organised with that end in view. The public interests involved in a sound management of the business of transportation are as great as those involved in a conservative management of the national banking system, and your committee is of the opinion that it is essential to the realisation of the idea of the control of railways through commissions, that a relation somewhat similar to the one existing between the national banks and the office of the Comptroller of the Currency, should be established between accounting departments of the carriers and the statistical divisions of commissions.

3. *Methods of Procedure.*[3]

"While this revised classification is issued upon the authority of the Interstate Commerce Commission, in accordance with the 20th section of the Act to regulate commerce, it should be stated that the work of revision was chiefly done by the Association of American Railway Accounting Officers, through a special committee appointed for that purpose.

"It may be proper to remind the carriers in this connection, that all technical questions relating to operating expenses submitted to this office are sent to the executive committee of the Association of American Railway Accounting Officers for consideration and advice, a procedure which insures that every question will be answered according to the concensus of opinion of railway accountants, and in harmony with the general principles underlying the classification; and accounting officers are especially urged to refrain from interpreting any questionable phrase, or from providing for any new class of expenditure upon their individual judgment, and to send all questions that may arise to this office, to the end that the uniformity of operating accounts may be maintained from year to year."

4. *Origin of the Classification.*[4]

"This classification was undertaken in response to frequent requests from the auditors of railways, who claimed to have received great assistance in their work from the revised 'classification of operating expenses,' and who expressed a desire for a corresponding analysis of construction accounts. The preparation of this classification has been largely the work of the executive committee of the Association of American Railway Acounting Officers, and it received the approval of the Association at its recent meeting held on 26th and 27th May, 1897, in Richmond."

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[3] Extract from the letter from Professor Adams preceding the classification of operating expenses.

[4] Copies of these classifications have been kindly presented to the Library by the author, and are thus available for reference by Fellows.—Ed.

These quotations show that the classifications prescribed by the Interstate Commerce Commission have not been drawn up by theoretical men, but have been arrived at in agreement with the representatives of some 200,000 miles of line. They are therefore found eminently workable, and their application causes the returns from all lines to be on a uniform basis, producing results that can readily be compared. The extract from the report of the committee on railway statistics shows that the point raised on p. 649 of Mr. Acworth's paper, in regard to endeavouring to estimate the cost of carrying a ton of goods or a passenger for 1 mile, had been considered, and that it had been definitely decided to abandon the attempt to estimate such cost.

It seems highly desirable that a similar association of accountants should be formed in this country, and I have no doubt that if such a body existed, the Board of Trade would co-operate with it in framing their requirements in such a way as would be most advantageous to all concerned. The idea that the Board of Trade is antagonistic to their interests would rapidly disappear, if it were possible to establish relations between it and the railway companies such as exists between the Interstate Commerce Commission and the railroads of the United States.[5]

With reference to the note on p. 646 in regard to the proposition on the part of the Interstate Commerce Commission, that the companies should furnish ton-miles as well as tonnage statistics by commodities, I do not quite agree with Mr. Acworth's conclusion, that the cost of obtaining such information would be quite incommensurate with the advantages to be gained. I notice from the replies received from seventy-eight companies, representing over 136,000 miles of line, in response to a circular issued by the special committee appointed to study the subject, that it was estimated the cost of furnishing this information would be about $15 per mile of line. It so happened that some years ago I inaugurated the practice of working up ton-mileage and revenue by commodities and pairs of points on the line of which I was chief accountant, and I found the extra expense considerably less than half the figure named. Moreover, the expenditure was far more than repaid by the valuable information thus always ready to hand. A special committee of five members (representing over 20,000 miles of line) was appointed by the Accountants' Association to study the question and confer with the Interstate Commerce Commission, and an extract from a letter I addressed to the chairman of that committee may help to explain.

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[5] Professor Adams, the Chief Statistician of the Interstate Commerce Commission, is himself an Honorary Member of the Association of American Railway Accounting Officers.

"It may interest you to know that I had information compiled showing ton-mileage and revenue by commodities in pairs of points, and the information was found to be of great value to the traffic department, as instead of submitting a general statement that freight-mileage and revenue had increased or decreased, I was able to show a statement of decreases which exactly located where such had occurred, and it only remained for the canvassers to explain where the traffic had gone to against each item. In our competitive districts the information was specially useful, as the canvassers were instructed to ascertain names of shippers and consignees, and find out why they were sending by our competitors. I had my ton-mileage forms ruled up for two years, so as to save the labour of heading up so many forms every year, and this also gave a comparison at sight by months on the same form every alternate year, and by having my attention drawn at once to any notable decrease, I was frequently able to give the traffic department information which would not have been nearly as valuable if held over till the end of a year."

From the chairman's reply to my letter I extract the following:—

"I am glad to receive the testimony in your letter stating what your practice was in respect to the compilation of earnings and ton-mileage by commodities. The special committee of five of the Association will have a meeting at Niagara Falls, and I shall take pleasure then in reading a portion of your letter to the other members of the committee.

"Just what will be done in the matter of the request of the Interstate Commerce Commission for the additional statistics will not be determined until some time later, when the special committee of five shall have had a conference with Professor Adams, Statistician of the Interstate Commerce Commission. In any event, it is not likely that the work of preparation will commence before 1st January, 1903."

Suppose the traffic department of one of our railways asks the audit office for a return showing by months all traffic in certain articles carried between all stations in groups A and B and groups S, T, and W. This means the special extraction under great difficulties (since existing forms are not adapted for it), and the payment in most cases of overtime, so that such return may cost 100*l.* or perhaps 500*l.*, or may be so expensive that the traffic department is advised not to press for the information. Again, local taxation is one of the burdens under which our railway companies groan, but it is very difficult to ascertain the precise earnings of the company in any one parish, and so it happens that if the increase of tax is within reasonable limits, it is probably cheaper to pay than to get out a special return, which in some cases may cost more than 1,000*l.* When traffic is grouped on the lines I have indicated it is so easy, comparatively, to glean any desired information, that I have come to the conclusion that there is actual economy in so abstracting it.

Of course I do not suggest that these voluminous details should be made public, but I do consider with Mr. Acworth that railway shareholders are entitled to fuller information as to the physical condition of their properties, and as to the services from which their revenue is derived and the purposes for which expenditure has been incurred. Whilst ton-mileage without careful analysis may lead to erroneous conclusions, there is still much to be gleaned from a comparison of one year's results with another, and I consider this information should be given in every report. With the aid of the Comptometer, Cotsworth's multiplication tables, and the Hollerith electric tabulator, the work involved bears no comparison with the labour in the early fifties.

VIII.—*Notes on Economical and Statistical Works.*

Poverty: a Study of Town Life. By B. Seebohm Rowntree. Fourth edition. 426 + xix pp., crown 8vo. London: Macmillan and Co., 1902.

The appearance in a cheap popular form of a fourth edition of Mr. Rowntree's investigation of the condition of the wage-earning classes in York, bears testimony alike to the keen interest taken by a large general public in social questions, and to their appreciation of the pains which Mr. Rowntree has bestowed on the execution of his work. The book has been published hardly more than a year, but its importance and value have met with prompt and wide recognition. The first edition was noticed in this *Journal* in March, and the present edition requires little additional comment. In the second edition, from which the fourth is apparently reprinted, Mr. Rowntree added some interesting observations on the "probable effect of Old Age Pensions on poverty in York," an "abstract statement of the York City accounts," tables showing the marriage ages in various countries, and information relative to workhouse dietaries. These additions have not affected the character of the reasoning, or the weight of the conclusions, of the original work; but they confirm the impression, which Mr. Rowntree's book must produce on every candid reader, of the scrupulous anxiety of the author to neglect no means of testing his arguments, and of the unreserved frankness with which he discloses the exact nature of the methods which he has employed. In these two important respects the book has worthily taken its place as a model of careful, honest investigation. Mr. Rowntree's main conclusions, indeed, were so disquieting and startling that he could hardly expect to escape very searching criticism, and the merits of his method exposed him to attack in a greater degree than less scrupulous writers. There are, as the earlier notice in this *Journal* showed, weak places in his statistical apparatus, and he himself makes no secret that one important link of his argument depends on estimates formed by his investigators, and not on ascertained or recorded facts. But, when the deductions that may be needed on this or other grounds have been made, it remains true that his book is one which no competent inquirer into the condition of the people can afford to neglect, and the success which it has attained shows that the favourable opinion of the expert is confirmed by that of the general public. On this notable agreement Mr. Rowntree may be cordially congratulated. L. L. P.

Bankers' Money: a Supplement to a Treatise on Money. By J. Shield Nicholson. 84 + viii pp., crown 8vo. London: Adam and Charles Black, 1902.

A book from Professor Nicholson's pen is sure to be lucid and interesting; and the present volume certainly does not fail to exhibit these great but rare merits of a currency treatise. It consists of four chapters, of which the first is entitled "What is Money?" the second deals with the "Foreign Exchanges," the third with the "Rate of Interest," and the fourth and final chapter with "Commercial Crises." The material of the book is based on lectures delivered to bankers and accountants; and Professor Nicholson must, we think, have succeeded in the very difficult task of making a practical audience welcome the illumination shed by economic theory on the problems with which they have to deal in their daily life. As he himself observes, "the treatment, as in the earlier work" (to which these chapters are a supplement), "is intended to be introductory and suggestive, and such as may help to stimulate those engaged in practical business to a wider study of the principles and history of finance." The earlier work, to which he thus refers, has now reached a sixth edition, and its success has been completely deserved. We have little doubt that these additional chapters will be equally successful. In a fresh edition of the *Treatise on Money* they may possibly be incorporated with the theoretical part of that book, even if some of the more ephemeral discussion, contained in the second portion on various monetary questions of a more or less controversial character, should be omitted to make sufficient room. The same capacity of plain exposition, at once intelligible to the layman and instructive to the expert, is displayed. The simple fundamental principles are first clearly stated, and then the complicated conditions under which they operate in the actual world of monetary practice are added in gradual orderly succession; for Professor Nicholson is careful to show the value of theory in such matters, without exaggerating the sufficiency of the conclusions reached by its assistance alone. The complexity of actual monetary fact is, he urges, so great that it would be impossible to thread the tangled maze without some firm and competent guidance. That strong direction is supplied by monetary theory. The foreign exchanges, for example, which from one point of view may be regarded as the most complicated portion of economic theory, from another are rightly treated as the exhibition of the causes and consequences of a simple elementary principle, like that of the relative indebtedness of different nations at the actual moment. They thus afford an instance of the mutual action and reaction of supply and demand on one another, and the complexities arising in their conduct in actual practice can be satisfactorily explained, and explained alone, when we start with this simple fundamental principle, and add by successive degrees the regulating circumstances of the rate of interest, the state of credit, and the condition of the currency. Professor Nicholson legitimately simplifies the position still further by regarding exports and imports as typical of other forms of indebtedness. His conclusion in his first chapter, that the "definition" and the "meaning" of money must vary with its functions, is similarly as illustrative of the shrewd sense which pervades his theoretical reasoning, as his opinion of the exaggerated influence attributed by some writers to the South African war on the yield of first-class investments, compared with that of the fresh openings now presented for the profitable employment of capital, shows the combined penetration and sanity of his judgment on a practical question. These qualities will recommend his book to the scientific student and the business man alike, and, while the latter may be tempted by Professor Nicholson to pay attention to what might, in the hands of a less skilful expositor, seem remote from fact and repugnant to practice, the former will, we are sure, derive no little elucidation of ideas, obscured before, from his firm and capable treatment. He will not expect to find much that is new, but he will discover what is old presented in a fresh illuminative light. L. L. P.

Ireland: Industrial and Agricultural. 532 pp., fo. 8vo. Dublin: Browne and Nolan, 1902.

In the preface to this instructive volume the Superintendent of the Statistics and Intelligence Branch of the Department of Agriculture and Technical Instruction for Ireland, who is responsible both for the preparation of the original issue, designed for the Department's exhibit at Glasgow last year, and for the present edition, which, as he remarks, has grown to the dimensions of what is "practically a new book," observes that "economic Ireland is still a *terra incognita* to too large a number, even of Irishmen." "The material resources of the country have," he continues, "been," in turn, "unduly exaggerated and underrated. An unreasoning optimism and an equally thoughtless pessimism, have, too often, been substituted for the calm observation and consideration of facts quite accessible to scientific tests." This defect the present work is intended to supply. It purposes to give an "unbiassed account of Ireland's economic and industrial position at the dawn of the twentieth century, with some statement of the historical events which have led up to that position." Controversial questions, like those connected with the tenure of land, have been judiciously omitted, for the very sufficient reason that they are fully discussed in other accessible publications. But the editor's claim that, within its necessary limits, the book "presents perhaps a fuller and fairer statement of the actual industrial position" of Ireland than is "contained in any other single volume" is, we think, as completely justified as his hope that "for several years to come" it "may serve as a useful book of reference, which, if it does not always and fully satisfy intelligent curiosity, will at least stimulate thought and suggest lines of inquiry," is destined to be fulfilled. The volume is a veritable storehouse of useful information. Painstaking industry and skilful intelligence have been applied to its acquisition and arrangement. From the general geological features of the island we pass to its climate, and *flora* and *fauna*. An account, taken from a paper read by Dr. Booth before the Royal Statistical Society, on the Economic Distribution of the People, is followed by a description of the means of communication and the organisation of banking. Agriculture and technical education and art instruction are then considered. The work of various voluntary agencies is reviewed, and from this survey of private activity we pass to the extensive operations of State officials, like those of the Congested Districts Board, and of the newly created Department of Agriculture and Technical Instruction, to whose capacity and enterprise the present work itself is due. In conclusion in various articles the present circumstances and future prospects of the different industries of the country are considered. In every case the most trustworthy sources of information have been carefully explored; and the result is a mass of authoritative material presented in orderly form and convenient shape. The bright and gloomy portions of the picture seem respectively to be drawn and coloured without concealment or exaggeration. On the one hand, the figures of the Economic Distribution of the People tell a discouraging story of declining population, accompanied by a diminishing proportion engaged in productive undertakings and an increasing section occupied in unproductive work. On the other hand, the recent successful development of co-operative methods in agriculture affords an example of the latent possibilities of prosperous enterprise, which apparently need only the judicious application of a wise but sanguine enthusiasm to be translated into energetic beneficent activity. As the editor declares, "a thoughtless pessimism," no less than an "unreasoning optimism" is dissipated by contact with the real facts, which are now presented in this elaborate work. L. L. P.

The American Cotton Industry. By T. M. Young, with an Introduction by Elijah Helm. 146 + x pp., crown 8vo. London: Methuen and Co., 1902.

This book consists of material collected during a tour in America. It was originally published in the form of letters to the *Manchester Guardian*. But it deserves the more permanent shape in which it now appears; for the book contains, as Mr. Helm remarks in his introduction, a "revelation" for Lancashire. "Looked at as a whole, indeed," he observes, "the facts," which Mr. Young supplies, "do not warrant anything like despondent views of the future of the great cotton industry of this country." But they "do indicate pretty plainly the need for some important changes in our methods." They justify the "suspicion," which had arisen, that "our competitors in the United States have been marching faster than we have in the path of economy of production." The increase in American exports of cotton goods has not only been continuously sustained in recent years, but it has coincided with a good American home trade, and cannot therefore be explained, as in previous years, by the disposal of a surplus unsaleable otherwise. The rapid growth, indeed, of the cotton mills of the Southern States during the last twenty years is "one of the most striking facts in the history of modern textile industry," and American competition is no longer an exceptional but a regular circumstance with which Lancashire must reckon. Nor is this recent progress, it would seem, appreciably due to nearness to the raw material. The Northern States enjoy no advantage in this respect over Lancashire, and even in the South the advantage which exists is not very considerable. The South has, indeed, reaped some benefit from a supply of cheap labour, not indeed furnished by the negroes, who prefer to work out of doors, but from isolated handicraftsmen who previously worked in independence in the mountain regions of Kentucky and Tennessee, and from the families of small farmers. This advantage, which is not shared by the manufacturers of the Northern States, who at any rate have had to pay higher wages than those ruling in the South, whatever the real cost of labour may have been, is apparently passing away, for these resources are becoming exhausted. But a more potent and significant influence is to be discovered in the general use in American mills of the automatic loom. "England alone is conspicuous among the great cotton manufacturing countries by the absence of this modern machine," which is found not merely in the States, but also on the European continent. That it will, however, soon be introduced in Lancashire seems no less certain than that the change will take place gradually, without any sudden displacement of labour. Mr. Young in his book gives a detailed account of the different places visited in the course of his tour. He explains the particulars of the organisation of the various factories, and states the exact conditions under which the cotton industry of the States is pursued. His instructive narrative brings again and again into prominence the American instinct for what is new (of which the adoption of the automatic loom is one example), which contrasts with the suspicion of the unfamiliar so commonly diffused in our own country, although the condition of our patent laws has apparently hindered the use of this particular machine. The continual introduction, however, of improved machinery, and the prompt abandonment of what has been superseded, however costly it may originally have been, are very characteristic American traits, and the manufacturers and workmen of the States certainly excel our own in this particular feature. This has been recently enforced by M. Levasseur in his elaborate treatise on the American workman, from which Mr. Young frequently quotes. The book now before us seems to convey in an impressive form the lesson urged with necessary emphasis in different quarters, that of the two competitors who seem destined to press us most hardly in the race for business, the American is more formidable than the

German, and that we can probably learn more that is applicable to ourselves from the conditions of the States, which are more akin to our own, than from the imitation of Teutonic methods of training or organisation. The Lancashire manufacturers have shown themselves alive to such considerations by dispatching a commission of inquiry to America, and Mr. Young's book is, in a sense, the first fruits of this enlightened policy, for, while the report of the commission was being prepared, his letters were published; and, as Mr. Helm remarks, the information which they supplied has been "widely and highly appreciated" by "influential persons interested in the cotton spinning and weaving industry of Great Britain." L. L. P.

The Employment of Women in the Clothing Trade. By Mabel Hurd Willett. 206 pp., 8vo. New York: the Columbia University Press, 1902.

In the preface to this essay, which belongs to the series of studies edited by the Faculty of Political Science of Columbia University, the authoress states that all that she "attempts is to give a description of the actual conditions under which women are working in a certain limited field of activity. My purpose," she adds, "has been to reveal special economic and social facts and relations, not to establish or defend any particular methods of regulation." She has, we think, been remarkably successful in achieving the purpose which she has set before her; and she has produced a conscientious piece of valuable honest accurate investigation. But in doing so she has also supplied the necessary material for forming a judgment on the methods of regulation that may be adopted to mitigate the evils which her inquiries have revealed The later chapters of the essay, on labour legislation and on trade unions, are characterised by the sober sense which is the natural outcome of thorough knowledge alone. She recognises alike the true possibilities and the real limitations of the remedies which such agencies can supply. She neither exaggerates nor minimises the difficulties with which they have to cope, nor the healing power which they may be expected to possess. In the earlier chapters she describes, with sufficient but not excessive detail, the place occupied by women in the clothing trade. For the most part she limits her investigations to the City of New York, although she is compelled in one important instance to go outside the city itself, and to draw her illustration from the State. She gives particulars of the systems under which the clothing trade is conducted, of the position filled by women in each department, of the part played by different nationalities, of the amount of earnings, the hours of labour, and the conditions of work. Features are disclosed somewhat similar to those with which investigations into the sweating system have rendered us familiar in this country. In America, as in England, the best conditions of industry prevail in factories or large establishments, which can be more readily inspected. In America, as in England, the work done at home falls into the hands of a special class of workers, content with a lower standard of living, hard to organise, and more difficult to bring within the reach of legislative regulation. The Italian immigrants furnish the majority of these "home-finishers." In America, as in England, the contractor or middleman—who intervenes between the actual worker and the manufacturer—often, perhaps generally, works as hard, and leads as hopeless a life, as those whose labour he directs; but in America, as in England, his intervention brings the serious drawback that it becomes more difficult to fix responsibility for the conditions of work on the manufacturer, who might otherwise be amenable to official inspection and to public regulation. Yet the work itself is such as to favour the system under which it is pursued, and the factory is as yet confined to certain departments of the trade alone. The problem is beset by difficulty, which must be overcome. It admits of no easy or precise general solution. It must be attacked with patience and with knowledge. The general conditions of American life indeed, with the higher standard of life of the general population—which is reflected even amongst the miscellaneous immigrants constantly arriving—are shown by the fact that the Italian home-finishers—who represent the lowest grade of the women workers in the ready-made clothing trade, needing no preliminary training, and content with scanty earnings—do not seem to become dependent in any large degree on charitable assistance. The workers in the factories situated at the opposite pole would excite envy, rather than arouse compassion. They are for the most part Americans born and bred. Dr. Willett describes their circumstances with the same impartiality and exactitude with which, in an introductory chapter, she furnishes an interesting sketch of the place taken by women in early economic history both in England and the States. Her whole monograph deserves, and will reward, the attention of students on both sides of the Atlantic. L. L. P.

Die Theorie von der sogenannten günstigen und ungünstigen Handelsbilanz. By Dr. Leo Petritsch. 203 pp., 8vo. Graz: Leuschner and Lubensky, 1902.

The newspapers have recently told us that Mr. Seddon is still of opinion that the balance of trade is against England. Nor is Mr. Seddon alone among politicians in holding the theories of two centuries ago about the balance of trade. General von Caprivi, Count Posadowsky, and M. Méline are among the distinguished statesmen who have considered it necessary that strong protective measures should be taken to prevent the imports of a country exceeding the exports. In the face of these opinions a critical scientific investigation of the theory of the balance of trade is interesting and useful. If politicians genuinely believe in the views they express, they will welcome a sober study of them. It cannot be satisfactory for them to base their political projects upon theoretical grounds whose chief claim to respect is their antiquity. This study of Dr. Petritsch must not be considered as a work of mere scientific or theoretical curiosity, but as a well reasoned attack upon half the politicians of Europe and most of the politicians of the United States and the British Colonies. It is for the political philosopher to explain the fact that the newer countries are attracted by the older doctrines. Dr. Petritsch does not trouble himself with this phenomenon. He writes as a scientific economist, and comes to a definite conclusion, namely, that none of the fears so widely expressed at present as to the evil effects of an unfavourable balance of trade can stand the test of criticism. "In all its forms," he ends by saying, "the theory of a favourable or unfavourable balance of trade is nothing but an industrial superstition." This is vigorous language, but it appears to be justified by the rest of the book. Its language is sober, its matter is learned, its arguments are carefully developed. Briefly, the main thesis is that business is not carried on by exchange or barter, but by sale and purchase. The business of paying for goods is a quite separate business from delivery of goods. A favourable or unfavourable balance of payments is a temporary and not a chronic condition of affairs. Accepting Ricardo's view, that the tendency to export money in exchange for goods, or what is termed an unfavourable balance of trade, never arises but from a redundant currency, Dr. Petritsch insists on the fact that this is not caused by the direct operation of the quantity of metallic money and prices, but through a whole row of intermediate steps, of discount, foreign exchanges, value of money, and other things. A great part of the book is taken up with a consideration of the way in which international indebtedness is liquidated, that is to say, with banking and the foreign exchanges, and not merely with the movements of goods and bullion. But he is not content with attacking the theory of the balance of trade as applied to modern conditions; he is equally relentless in discussing whether in earlier times, in which the technique of intentional payments was simpler, the theory ever had any historical justification. His conclusions are equally unfavourable to the theory. So long as some persons are found who believe that the power of States depends upon the quantity of actual bullion they possess, or other persons are found who consider that to say that a country is a dumping ground for another country's products, is a proof that it is disadvantageous to a State to buy goods cheaply, the mercantile theory will subsist. But the mere fact that the use of an inelegant word like "dump" has to do duty for an argument, shows that the mercantilists are being hard pressed. Dr. Petritsch presses them still harder, and deserves the thanks of political economists for doing so. C. P. S.

The London Life-Table. P. S. King and Son, 1902.

The basis of the London Life-Table is the enumerated population in 1891 and 1901, and the deaths over that period. In London about 30 per cent. of the registered deaths occur in public institutions, and as many of the persons as dying previously lived out of London; similarly many institutions (such as lunatic asylums) in the vicinity but not in the area of London are filled with Londoners. To get rid of the disturbing influence of these "institution deaths," the actual number of deaths at each age properly belonging to the London population were obtained from the records of the Registrar-General for the years 1897-1900, and from these the proper numbers for the whole decade 1890-1900 were estimated. From the census returns the mean population was determined by the useful formula of Mr. A. C. Waters, explained by him in a recent number of this *Journal*.[1] From the deaths and population figures the p_x column was then calculated. Of course special methods were adopted for the ages under 5. For the ages over 5 curves were obtained, for from 5 to 25 based on six orders of differences, and from 25 to 35, 35 to 45, 45 to 55, 55 to 65, and 65 onwards, a series based on five orders of differences; in some cases two series were taken and blended by a cosine formula.[2] The method of fitting different curves through various groups of fixed points, and then blending in them is well established; but it is not easy to see why for values from 25 to 65 the procedure of fitting the figures to Makeham's formula is not better. Makeham's formula fits parts of the life-table very well; and there is less arbitrariness in fitting to a definite formula, than in fitting pieces to what is in fact a parobolic curve and then blending them together. From Professor Pearson's article on Curve-Fitting in a recent number of *Biometrika* (vol. i, p. 265), it appears that the labour of such a fitting is not insuperable. These observations are not made with the intention of detracting from the work of Mr. G. H. Day (who actually did the work), but because the reasons for the special method adopted should have been given. As this is the first extended life-table which has been published for London, we cannot compare its results with those of earlier decades, but Dr. Hayward has recently in this *Journal* (vol. lxii, p. 443) shown how the expectation of life at quinquennial periods can be calculated by a short method which gives very good results. Using Dr. Hayward's methods, a comparison of the results for 1881-90 with those for 1890-1900 shows that both males and females at all ages have a greater expectation of life in the later decade; this increase is very marked at the earlier ages (being 1·25 years for males and 1·16 for females at the age of 5), but it gradually becomes smaller as the ages advance. A comparison of the results for 1881-90 for England and Wales with those of London for 1891-1900 gives us for males:—

		England and Wales.	London.
Expectation of life at birth		43·66	40·98
Age of maximum expectation		3	3
Increase of expectation from birth to age of maximum	In years	9·66	11·4
	Per cent.	22·1	26·9
Year of life in which the expectation first falls below that at birth		16th	18th

London therefore is more deadly for infants than the country as a whole. Another interesting set of figures gives us the average "life capital" or "future lifetime" of each member of the population. For all persons this is 35·76 years, the figures for males and females respectively being 34·59 and 36·80 years.

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[1] See *Journal of the Royal Statistical Society*, vol. lxiv, p. 293.

[2] Logarithms of the actual figures were of course used.

The construction of the London Life-Table is certainly a most useful and important piece of municipal enterprise. It is to be hoped that other great municipalities will follow the example given them by London. We congratulate Mr. Murphy, the Medical Officer of Health, on the excellent use he has made of Dr. Hayward's methods, but by way of criticism it might be suggested that the account of the methods of calculation and interpolation should be a little fuller. As it is, it is doubtful whether a person who was previously ignorant of vital statistics would have been able completely to follow the explanation, and it is important that statistical methods should not remain a secret for experts, but should form part of the common stock of human knowledge. C. P. S.

Memorandum on the Comparative Statistics of Population, Industry, and Commerce in the United Kingdom and some Leading Foreign Countries. [C–1199.] 1902. Eyre and Spottiswoode.

Sir Alfred Bateman's memorandum supplements and continues the memorandum of 1897 upon the same subject; it contains figures which might serve as a text to many political speeches, particularly those of an alarmist tendency; but a closer inspection only shows us how extremely difficult it is to draw trustworthy conclusions from statistics of this class; the statistics tell us what they palpably say; for we learn that the average annual production of pig iron over a certain period in such a county is so and so, but the moral is not so easy to point. The particular statistics selected in order to illustrate Great Britain's position in the industry and commerce of the world, are determined much more by the fact that they are the statistics we have got than by the fact they are the statistics which the theorist would like to have. Export and import statistics are comparatively easy to collect, and tell us no doubt a good deal about the external trade of a country, but there is a natural tendency to consider this as an indication of the total trade and prosperity of that country; but it is clear that the internal trade is in most cases much more important than the external trade, that the larger the area we deal with the smaller the proportion of external trade; and that, other things being equal, the ratio of external to internal trade in a country may only indicate the comparative unfitness of that country to produce certain products. Let us illustrate these propositions. The exports per head of the population of the United Kingdom are about 6*l.*, the imports about 10*l.* But the average expenditure per head must be something like 50*l.*; thus the external trade is only about one-fifth of the internal trade; in other countries it is much less. The external trade is therefore of small importance compared to the internal. The second proposition is an evident conclusion of logic. Suppose all the States of the United States of America were independent statistical entities, and we found their exports and imports per head; then if we consolidate all these States into one, we see that all the interstate commerce would be from our statistics of export and import, and this diminishes the amount of exports and imports per head. The third proposition is also fairly evident. If this country could produce tea as easily as India, or tobacco as easily as Virginia, it would no doubt spend part of its energies in producing these products at home, and not in producing articles for export to pay for the tea and tobacco. If it did this, its external trade would diminish, though its total trade, external and internal, would increase. Export and import statistics, though of great importance, are liable to loom too large in the minds of the plain politician.

With these preliminary warnings we can return to the figures; some of the facts are a little surprising. Our imports from France have increased considerably, mainly in silk manufactures and miscellaneous articles. Our exports to France (if we except a special export of coal at high prices in 1900) have sensibly diminished. We have slightly increased our imports from Germany, but the figures do not show any material displacement of home manufactures in our home markets. We have largely increased our imports from the United States; our exports to the United States have greatly diminished. It has been suggested that the increase of imports has been due to the fact that the United States have been repurchasing American securities in the United Kingdom. On this part of the subject Sir A. Bateman's general conclusion is that, "in spite of the strides made by Germany and the United States in recent years, we still preponderate greatly as a country manufacturing for export. Germany and the United States have largely developed in capacity to manufacture, not only for their home markets, but for export also; and even France has made some gains. Our exports, however, consist more largely of manufactured goods, in proportion to our whole exports, than do those of France and the United States, but we are run very close by Germany in this respect. Nevertheless, measuring per head of the population, we are far ahead of Germany or any other of our competitors." When we consider the trade with neutral markets, we find that, though Germany and the United States have progressed more rapidly than we have, yet our export trade has not been displaced by them.

In conclusion, the way in which the figures are presented may be mentioned. Five-year averages are very frequently used. Averages must be used, but danger lurks in them. When trade cycles had a period of ten or eleven clear years, ten-year averages gave very good results; five-year averages might give very erroneous ones if we compare one set of five years with the next. Now that the ten-year period has broken down, it is still more difficult to determine what averages should be used. It would be better to give annual values and quantities, and represent them by a curve. The eye can then easily follow the general course of the figures; the ups and downs of trade, as well as the larger movements, can easily be seen, and the dangers of averages are avoided. The additional expense would be remunerative if it gave the reader a better grasp of the figures. The statistics of British and Foreign trade always attract great attention, but the persons who write articles about them are not always skilled statisticians; they should be helped as much as possible, for they do much, whether for good or evil, in forming public opinion on the subject of our commercial policy. We are now face to face with two great competitors—the United States and Germany. It is important to know how we stand, and how we advance or decline. Nothing will represent the figures so elegantly as curves, whereas averages too often stand between the facts and the truth.

If official curves of the consumption and production of a few of the most important articles and also of the railway traffic returns were published annually, the public would easily be able to learn much about the general ups and downs of trade. No doubt such curves exist, for without them it is difficult to see how the Budget estimates are framed. Why then should they not be published? C. P. S.

An Essay on the Reform of Local Taxation in England. By J. Row-Fogo. 400 + xi pp., 8vo. London: Macmillan and Co., Limited, 1902.

The reform of local taxation may now be reckoned as one of the burning questions of the day. The battle ranges round many points of controversy, and it is necessary for the various partisans to show great mental agility in attacking and defending the various positions, because, curiously enough, the two great parties of the State have to adopt different theories of incidence in the town and the country. Who pays the rates? "The occupiers," say the Conservatives, "the landlords," say the Liberals, when they are debating the Agricultural Rates Act. But when it is suggested that, as the landlords really pay the rates, it would be more rational to collect them from those landlords in towns, the Conservatives repel this suggestion with some vigour, and say that taxation and representation should go together. Here alone is sufficient opportunity for animated dispute, and when further complications arise from the vehemence of the single-taxers, from the demands of the clergy and the theoretical study of incidence, matters become very lively indeed. Mr. Row-Fogo steps into the *melée*, and breaks heads both scientifically and unmercifully; he uses plain language, and his book is all the better for his doing so. But is it not a little daring to refer to a statement in a report of a Royal Commission, signed by a Cabinet Minister, as "probably the most absurd statement in the whole course of that most absurd report?" or to refer to those persons who agree with a view which has the authority of so distinguished a statesman and economist as Lord Goschen, as "hereditary burden bigots?" But such phrases show that Mr. Row-Fogo has his heart in his work and feels as well as thinks.

The kernel of Mr. Row-Fogo's position is expressed in the following quotation; "Before anything can be done in the way of reform, a final answer must be secured to the question, Who pays the rates? The various answers which may be given fall into three classes: (1) That the landlord pays all the rates; (2) that the tenant pays all the rates; (3) that deceased landlords, landlord, and tenant all pay rates, and that the proportions in which they respectively do so vary not only from place to place, but according to an infinite number of circumstances, most of which are incalculable and incapable of being expressed in definite terms. The last is the economic theorist's answer to the question, Who pays the rates? Briefly expressed, it is simply this: 'Goodness knows.' For practical purposes this answer is useless. It is impossible to produce a scheme of finance if the taxpayers are goodness knows who. No proposition can be more obvious. Consequently it follows that answer (1) is serviceable as a basis for reform, and that so is answer (2), but that answer (3) paralyses all action." The conclusion to be drawn from the last sentence is obvious. The "reformer" must refuse to admit or believe the truth if it will paralyse reform. Can any position be more unscientific? And yet Mr. Row-Fogo never seems to tire of sneering at agitators. The economist's answer to the difficult question having been found unsuitable to reformers, we are left with the choice between answers (1) and (2): Do the landlords bear the burden of rates? There are eminent persons—including Sir Robert Giffen—who contend that they do. How does Mr. Row-Fogo deal with their views and arguments in support of this? By asserting that the explanation of the view is to be found in "party politics." He goes so far as to quote a passage from one of Sir Robert Giffen's famous Essays in Finance, and then does not advance one word of argument against Sir Robert's logic, unless indeed the sentence (p. 116), "Sir Robert Giffen's method of proving the groundlessness of a plea by logic has found a thousand imitators," is meant to do duty for one. Does the Agricultural Rates Act, in the long run, benefit owners? Mr. Row-Fogo admits that in theory it does, but denies that it does in practice, largely, it seems, on the ground that farmers cannot keep accounts. But farmers are alive to their own interests, and why should they continually be willing to pay a tax which in theory they can shift on to their landlords? That farmers derive a temporary benefit from the Agricultural Rates Act is obvious, that they may derive a permanent benefit, because impoverished landlords may make harder bargains than well-to-do ones, is possible, yet this does not prove that landlords get no benefit from the Agricultural Rates Act.

Mr. Row-Fogo therefore arrives at the surprising conclusion that all rates fall on occupiers, and the way is open to the reformer; but it is time to try to explain the aim of Mr. Row-Fogo's book. We have been led into criticism rather than exposition, because the book excites criticism by its tone, and a little criticism more easily illustrates the general nature of its contents than a mere summary of its leading features.

The first three chapters of the book aim at establishing three propositions: (1) Rates before the statutory period were not imposed on a direct assessment of a man's entire property, but according to a rough guess of his entire property, based on outward criteria. (2) The view that rates in their statutory form, as determined by the Acts of 1836 and 1840, represent the remnant of a direct property-tax, which has been rendered incomplete by the exemption of personalty, is due to the confusion caused by judicial interpretation. (3) The belief in the existence of "non-rateable property," namely, a class of property which does not contribute to rates, is unscientific, and as misleading as would be the use of a phrase such as "non-exciseable property." A large part of the remainder of the book is filled with criticisms of the report of the Royal Commission on Local Taxation. His criticisms are often just, and nearly always pungent. His position is that rates should be imposed according to ability; that is, according to the incomes of ratepayers, but unfortunately he gives but little space to his proposals for reform. At a future time, perhaps, Mr. Row-Fogo will develop a complete and detailed scheme of reform; he is well fitted for the task; he is acquainted with the recent Prussian reforms; he knows what he wants, and why he objects to other people's plans. This essay should be regarded by him as a weeding of the ground before he sows the seeds of his wisdom. However cordially readers will disagree with parts of his book—and there is little doubt but that many people will cordially disagree—they will be bound to recognise the ability and fervour with which it is written. C. P. S.

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UNITED KINGDOM—

Economic Journal. *September*, 1902—Free Trade and Protection: *L. L. Price.* Mr. Wise's Industrial Arbitration Act: *W. P. Reeves.* Agricultural Co-operative Credit Associations: *W. H. Dawson.* Public House Trust Companies: *E. Hesketh.* Business Aspects of British Trusts: *H. Macrosty.* The Canadian Government and the Railway Problem: *S. J. McLean.* Theory connected with the Corn Tax: *A. Pigou.* Sugar Industry in the West Indies: *H. Cox.* The General Strike in Belgium: *E. Mahaim.*

Economic Review. *October*, 1902—A Natural Outcome of Protection: *W. F. Ford.* The Ethics of Employment: *J. G. Leigh.* Co-operative Agriculture in Denmark: *E. Givskov.* The American Invasion of Canada, and how to meet it: *A. Smith*: Co-operation as a Link among Nations: *H. W. Wolff.*

Journal of the Institute of Actuaries. *October*, 1902—Vaccination and the Act of 1898: *A. F. Burridge.* The British Census of 1901.

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October—The Growth of London as the Financial Centre of the World: *E. W. Sykes.* Early Closing on Saturdays.

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Journal of the Department of Agriculture and Technical Instruction for Ireland. September, 1902—Diseases of the Potato. The Technical Education of Printers and Lithographers. The Determination of Water in Butter.

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American Statistical Association, Publications. September, 1902—A Statistical study of the fatality of Typhoid Fever at different seasons: *C. E. A. Winslow.*

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Journal of Political Economy, 1902—

June—Freight rates on Argentine and North American Wheat: *R. R. Kuczynski.* American and German high-speed trains: *G. G. Tunell.* Government Construction of Irrigation Works: *R. P. Teele.* The Canadian Budgetary System: *R. C. Matthews.* Professor Marshall on Economics for Business Men. Reclassification of the Paper Currency: *F. L. McVey.* Safe-guarding of Factory Machinery: *J. Moersch.* Collectivism and Industrial Development: *W. E. Walling.*

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September—La convention et le maximum : *E. Levasseur.* La question du suffrage universel en Belgique: *E. van der Smissen.* La politique financière de l'empire anglo-indien : *P. Laragne (concluded).* A la conquête d'un Isthme :—La solution diplomatique—le traité Hay - Pauncefote: *P. Lefébure.* Les délégations financières algériennes: *E. Cleray.*

November—La question du rachat et la gestion financière des chemins de fer de l'État français : *G. L. Jaray.* Le nouveau gouvernement local de l'Irlande: *G. Lecarpentier.* Les industries minérales et métallurgiques en Russie: *J. Wilhelm.* La Caisse des dépôts et consignations, I: *G. Flandin.* L'hospitalité de nuit à Paris: *P. Henry (concluded).*

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September—Les Travaux parlementaires de la Chambre des Députés, 1901-02 : *A. Liesse.* Les Syndicats industriels en Autriche: *A. Raffalovich.* La Protection a-t-elle profité aux États-Unis? : *M. Rouxel.* Mouvement scientifique et industriel : *D. Bellet.*

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November—Les Trusts et les Syndicats industriels en Angleterre : *A. Raffalovich.* Une opinion anglaise sur le Municipalisme : *D. Bellet.* Les crises des caisses d'épargne : *A. de Malarce.* A propos du rachat des chemins de fer : *E. Macquart.* Les opérations de la monnaie de Paris en 1901 : *M. Zablet.*

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September—Du degré d'efficacité de la loi du 24 décembre, 1874 (loi Théophile Roussel et la mortalité des enfants du premier age) : *J. Bertillon (concluded in October).*

October—Diminution des risques d'accidents dans les houillères françaises depuis 1833 : *M. O. Keller.*

November—L'Industrie du sucre sur le Continent : *Y. Guyot.* Le Mont-de-Piété de Paris.

December—Comment nous défendre contre le trust de l'Océan : *G. Cadoux.* Les chemins de fer du monde.

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La Réforme Sociale. 1902—

Nos. 16 *and* 17—Le Congrès des habitations à bon marché et le Congrès des assurances sociales à Dusseldorf : *G. Blondel.*

No. 18—Verriers champenois : *M. Deviolaine.* L'école supérieure d'agriculture d'Angers : *E. Vetillart.*

FRANCE—*Contd.*

La Réforme Sociale. 1902—*Contd.*

No. 19.—Du profit que retire un jeune homme de l'histoire des doctrines économiques: *A. Deschamps.* Du rôle social du propriétaire foncier selon les différents types d'exploitation du sol: *F. Lepelletier.*

No. 20—Encore les retraites ouvrières: *H. Valleroux.* Le Congo belge et les progrès de la colonisation: *P. Verhaegen.*

No. 21—La dépopulation en France: *H. Clément* (*concluded in No.* 23). De la corruption de nos institutions: *H. Joly.* De l'influence des habitudes sociales sur l'esprit d'initiative: *C. Hardy.*

No. 22—L'enseignement de l'histoire: *F. Funck-Brentano.* Jaunes et Rouges: *M. Delcourt-Haillot.*

No. 23—L'instruction économique et l'éducation sociale de la jeunesse universitaire anglaise: *J. Bardoux.* L'école des hautes études industrielles de Lille: *M. Vanlaer.*

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Archiv für Soziale Gesetzgebung und Statistik. Hefte 5 *und* 6, 1902. Der Stahlarbeiterstrike vom Sommer, 1901, und seine Lehren: *H. Waentig.* Koalitionsrecht und Erpressung: *W. Heine.* Die englische Fabrikgesetzgebung in den Jahren 1878-1901: *H. W. Macrosty.* Die Lage der studentischen Hauslehrer an den Wiener Hochschulen: *F. Winter.* Die Aussichten der elektrischen Landwirtschaft: *O. Pringsheim.*

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Jahrbücher für Nationalökonomie und Statistik. 1902—

September—Die gegenwärtige Wirtschaftskrise: *F. Eulenburg.* Die Entwickelung und der derzeitige Stand der Hypothekarstatistik in den einzelnen Staaten: *F. W. R. Zimmermann.*

October. Wer ist heute Sozialist?: *F. J. Neumann.* Zur Entwickelung der russischen Reichsfinanzen: *v. Heckel.* Reedereien und Ausnutzung des Schiffsmaterials im Seeverkehr in den verschiedenen Staaten: *F. Landau.* Die Finanzen der deutschen Bundesstaaten: *F. Zahn.*

November—Zur Agrargeschichte der Nordostschweiz und angrenzender Gebiete vom 10 bis zum 13 Jahrhundert: *G. Caro.* Die Privatversicherung der Schweiz und Oesterreich-Ungarns in amtlicher Darstellung: *A. Manes.* Die Hypothekarkreditgenossenschaften in Dänemark: *H. Pudor.* Die Entwickelung des Preisniveaus in den letzten Jahren. Aus der Handelsgeschichte Japans: *K. Kiga.*

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Vierteljahrshefte zur Statistik des Deutschen Reichs. Heft 3, 1902—Deutschlands Aussenhandel mit einigen für die deutsche Farbenindustrie wichtigen Waaren im letzten Zahrzehnt. Statistik der Preise. Weitere Ergebnisse der Volkszählung, 1900:—Alter und Familienstand, Religions-Verhältnisse, Muttersprache, Stadt und Land. Tabackbau und Tabackernte, 1901. Die Ergebnisse der Ermittelung der landwirthschaftlichen Bodenbenutzung im Jahre 1900. Anbauflächen der hauptsächlichsten Fruchtarten im Juni, 1902.

Zeitschrift für Socialwissenschaft. 1902—

Heft 10—Beiträge zur Beurteilung einer wirtschaftlichen Foederation von Mitteleuropa. III: *Frhr. von W. Sartorius* (*concluded in next No.*). Die Entwicklung der Konsumvereine in Deutschland: *Dr. Crüger.* Amerikanische Rassenfragen: *A Vierkandt.* Feuerversicherungsstatistik: *O. Prange.*

Heft 11—Malthusianische Bestrebungen in Westeuropa. I: *G. Stille.* Aus der Geschichte der Zünfte. I: *P. Frauenstädt.* Zollvereinigungen oder wirtschaftliche "Allianzen"?: *J. Wolf.*

ITALY—

La Riforma Sociale, 1902—

September—Gli inscritti nelle università e negli istituti superiori del regno: *C. F. Ferraris.* La questione della misurazione del minerale nelle zolfare siciliane: *F. Gallina.* Il regime fiscale dei valori mobiliari: *Spectator.*

October—Il criterio economico nella stima e nel compenso dei miglioramenti rurali: *F. Coletti.* L' emigrazione dal Polesine (1881-1901): *G. Cavaglieri* (*continued in next No.*). Il nuovo regolamento generale universitario: *E. Vidari.*

November—Giorgio Sorel e il Socialismo: *V. Racca.* Per la riduzione del prezzo del sale: *L. Nina.*

Giornale degli Economisti, 1902—

August—La tassazione locale in Inghilterra: *L. L. Price.* La Municipalizzazione dell' acqua potabile e dei tramways: *G. V.* Liberismo e legislazione di classe: *F. Coletti.* La questione zuccherifera in Francia: *G. François.*

September—Il fenomeno dell' urbanismo: *A. Contento.* Gli agricoltori italiani nell' Argentina: *P. Ghinassi* (*continued in next No.*). I fenomeni e le leggi dell' inventario: *G. Ghidiglia.*

October—L'abolizione dei dazi nei Comuni Chiusi: *L. Nina.* Co-operazione di classe: *G. Valenti.*

November—Di un nuovo errore nello interpretare le teorie dell' economia matematica: *V. Pareto.* La nuova politica commerciale dell' Italia ed il congresso delle società economiche a Torino: *E. Giretti.* Il credito e il fabbisogno di capitale dell' agricoltura italiana: *G. Valenti.*

SWITZERLAND—

Journal de Statistique Suisse, 1902—

Lief 3—Die Tuberkulose in der Schweiz, deren Verbreitung und bisherige Bekämpfunge: *A. Käppeli.* Die schweizerische Mortalitätsstatistik und ihre Beziehungen zum Kampfe gegen die Tuberkulose: *Dr. Hürlimann.* Über die Notwendigkeit einer Enquete zur Erforschung der Ursachen der Tuberkulosensterblichkeit in der Schweiz und die Art und Weise ihrer Durchführung: *Dr. C. Merz.*

Lief 4—Grundzüge des Finanzhaushaltes der Kantone und Gemeinden: *J. Steiger.* Statistische-volkswirtschaftliche Gesellschaft zu Basel. Finanzstatistik der Gemeinden von Appenzell a/Rh: *J. J. Tobler.* Statistische Notizen aus dem luzernischen Erziehungswesen 1876-1900.

Répertoire des matières contenues dans les 37 volumes des années 1865 à 1901, du "Journal de Statistique Suisse."

IX.—*Quarterly List of Additions to the Library.*

Additions to the Library during the Quarter ended 15th December, 1902, arranged alphabetically under the following heads:—(a) *Foreign Countries;* (b) *India and Colonial Possessions;* (c) *United Kingdom and its Divisions;* (d) *Authors, &c.;* (e) *Societies, &c.* (*British*); (f) *Periodicals, &c.* (*British*).

The Society has received, during the past quarter, the current numbers—either quarterly, monthly, or weekly—of the periodical official publications dealing with the following subjects:—

Consular Reports—From United States and United Kingdom.

Labour Reports, &c.—From Austria-Hungary, Belgium, France, United States, New York State, New Zealand, and United Kingdom.

Trade Returns—From Argentina, Austria-Hungary, Belgium, Bulgaria, China, Egypt, France, Germany, Greece, Italy, Mexico, Netherlands, Russia, Spain, Sweden, Switzerland, United States, India, Canada, and United Kingdom.

Vital Statistics—From Argentina, Egypt, Germany, Italy, Netherlands, Roumania, Switzerland, United States (Connecticut and Michigan only), Queensland, South Australia, and United Kingdom.

Vital Statistics of following Towns—Buenos Ayres, Buda-Pesth, Brünn, Prague, Brussels, Copenhagen, Berlin, Bucharest, Madrid, London, Manchester, Dublin, Edinburgh, and Aberdeen.

The Society has received during the past quarter the current numbers of the following unofficial Periodicals and Publications of Societies, &c., arranged under the Countries in which they are issued:—

Denmark—Nationalökonomisk Tidsskrift.

France—Annales des Sciences Politiques. Économiste Français. Journal des Économistes. Monde Économique. Polybiblion, Parties Littéraire et Technique. Réforme Sociale. Le Rentier. Revue d'Économie Politique. Revue de Statistique. Journal de la Société de Statistique de Paris.

Germany—Allgemeines Statistisches Archiv. Archiv für Soziale Gesetzgebung und Statistik. Deutsche Oekonomist. Jahrbuch für Gesetzgebung, Verwaltung, und Volkswirtschaft. Jahrbücher für Nationalökonomie und Statistik. Zeitschrift für die gesamte Staatswissenschaft. Zeitschrift für Socialwissenschaft. Mittheilungen aus der Handelskammer Frankfurt a. M.

Italy—L'Economista. Giornale degli Economisti. Rivista Italiana di Sociologia. Riforma Sociale.

Sweden—Ekonomisk Tidskrift.

Switzerland—Journal de Statistique suisse.

United States—Banker's Magazine. Bradstreet's. Commercial and Financial Chronicle, with supplements. Engineering and Mining Journal. Journal of Political Economy. Political Science Quarterly. Quarterly Journal of Economics. Yale Review. American Academy of Political and Social Science, Annals. American Economic Association, Economic Studies and Publications. American Geographical Society, Bulletin. American Statistical Association, Quarterly Publications. American Philosophical Society, Proceedings and Transactions. Columbia University, Studies in History, &c.

India—Indian Engineering. Asiatic Society of Bengal, Journal and Proceedings.

Canada—The Chronicle: Insurance and Finance.

New Zealand—Government Insurance Recorder. Trade Review and Price Current.

United Kingdom—The Accountant. Accountants' Magazine. Athenæum. Automobile Club Journal. Australian Trading World. Bankers' Magazine. Bimetallist. British Refrigeration. British Trade Journal. Broomhall's Corn Trade News. Browne's Export List. Citizen. Colliery Guardian. Commercial World. Economic Journal. Economic Review. Economist. Enterprise. Fireman. Incorporated Accountants' Journal. Insurance Record. Investors' Monthly Manual. Investors' Review. Iron and Coal Trades' Review. Labour Co-partnership. Licensing World. Machinery Market. Nature. Navy League, Journal. Policy-Holder. Post Magazine. Public Health. Publishers' Circular. Sanitary Record. Shipping World. Statist. The Times. Tuberculosis. West Africa. Anthropological Institute, Journal. Cobden Club, Leaflets. East India Association, Journal. Howard Association, Leaflets, &c. Imperial Institute, Journal. Institute of Actuaries, Journal. Institute of Bankers, Journal. Institution of Civil Engineers, Minutes of Proceedings. Iron and Steel Institute, Journal. Lloyd's Register of British and Foreign Shipping, Statistical Tables. London Chamber of Commerce, Journal. London University Gazette. Manchester Literary and Philosophical Society, Memoirs and Proceedings. Royal Agricultural Society, Journal. Royal Asiatic Society, Journal. Royal Colonial Institute, Proceedings and Journal. Royal Geographical Society. Geographical Journal. Royal Irish Academy, Proceedings and Transactions. Royal Meteorological Society, Meteorological Record and Quarterly Journal. Royal Society, Proceedings. Royal United Service Institution, Journal. Sanitary Institute, Journal. Society of Arts, Journal. Statistical and Social Inquiry Society of Ireland, Journal. Surveyors' Institution, Professional Notes and Transactions. Trade Circulars.

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(a) Foreign Countries.	
Argentine Republic—	
Bulletin démographique argentin. Année iii, No. 8, Mars—Sept. 1902	The Ministry of the Interior
Buenos Ayres (*Province*). Direccion General de Estadistica. Boletin mensual. (Current numbers)	The Provincial Statistical Bureau
Buenos Ayres (*City*). Annuaire Statistique de la Ville. xi^e année, 1901. Map, 8vo.	The Municipal Statistical Bureau
Argentine Year-Book (1902), with which are incorporated the "Anuario Pillado" and "John Grant's Argentine Commercial Guide." 8vo. 1902	The Publishers
Austria-Hungary—	
Ackerbau-Ministeriums. Statistisches Jahrbuch des k.k. (Current numbers)	The Ministry of Agriculture
Arbeitsstatistisches Amt. k.k. Arbeitszeit-Verlängerungen (Überstunden) im Jahre 1900, in Fabriksmässigen Betrieben. 41 pp., 8vo. 1902	The Austrian Labour Department
Finanz-Ministeriums. Mittheilungen des k.k. (Current numbers.) 8vo. 1902	The I. & R. Ministry of Finance
Österreichisches Wirtschaftspolitisches Archiv. (vormals "Austria"). (Current numbers.) 8vo.	The Ministry of Commerce
Banken. Statistik der, für 1898 und 1899. Fol.	The Central Statistical Commission
Österreichisches Statistisches Handbuch für 1901.	
Sanitätswesens. Statistik der, für 1899. Fol.	
Unterrichts-Anstalten. Statistik der, für 1898-99	
Volkszählung, 31 Dec., 1900. Ergebnisse der. Heft 1. Summarischen Ergebnisse der Volkszählung. Band ii, Heft 1. Anwesende Bevölkerung nach ihrer Heimatsberechtigung. Maps, fol. 1902	
Statistische Monatschrift. (Current numbers)	
Statistische Nachrichten aus dem Gesammtgebiete der Landwirtschaft. (Current numbers)	
Hungary. Commerce extérieur des Pays de la Couronne hongroise en 1901. La. 8vo. 1902	The Central Statistical Bureau
Bohemia—	
Mittheilungen des Statistischen Landesamtes. Band iii, Heft 2, und Band iv, Heft 1. 8vo. 1901-02	The Statistical Bureau
Statistische Uibersicht über die Umlagen zu den directen Steuern dann über Einnahmen und Ausgaben der Gemeinden und Bezirke für 1898. 8vo. 1902	
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Catalogue de la Bibliothèque de la Commission Centrale de Statistique. Tome i, Ouvrages Généraux. 8vo. 1902	
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Mines. Annales des. (Current numbers)	
Travail des Femmes et des Enfants, police des établissements classés, payement des salaires . . . Lois et Règlements concernant. 8vo. 1896	Sir Alfred E. Bateman, K.C.M.G.
Travail. Annuaire de la Legislation du Travail. 4e année, 1900. 8vo. 1901	
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Travail du Dimanche. Vols. ii—v. 4 vols., 8vo. 1896-98	
Collection of Pamphlets dealing with Workmen's Insurance against Accident and Sickness, Arbitration, &c. 8vo. 1892-98	
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Brazil—	
Importação e Exportação. Movimento maritimo e cambial. Jan.-Dec., 1901. Fol.	The Bureau of Statistics
Movimento do commercio exterior. 1er Trimestre de 1902. La. 8vo.	
China—	
Customs Gazette. (Current numbers)	Sir Robert Hart, Bart., G.C.M.G.
Denmark—	
Justice civile, 1896-1900. 4to. 1902	The State Statistical Bureau
Marine marchande et navigation du Danemark, 1901. 4to. 1902	
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Agriculture. Annales du Ministère de l'. (Current numbers)	The Ministry of Agriculture
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Institutions d'Assistance. Statistique annuelle des, années 1899 et 1900. 8vo. 1902	The French Labour Department
Travail. Statistique des Grèves et des recours à la Conciliation et à l'Arbitrage pendant 1901. 8vo.	
Almanach de la Coopération Française, 1897. (5ᵉ année.) 12mo. Paris, 1897	Sir Alfred E. Bateman, K.C.M.G.
Annuaire des Syndicats professionnels ... 10ᵉ année, 1898-99. 12ᵉ année, 1901. 2 vols. 8vo.	
Travail. Recueils de Rapports sur les Conditions du Travail dans les Pays étrangers ... Allemagne, Autriche-Hongrie, Belgique, Danemark, Espagne et Portugal, États-Unis, Grande Bretagne, Italie, Pays-Bas, Russie, Suède et Norvège, Suisse. 8vo. Paris, 1890-91	
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Binnen-Schiffahrt im Jahre 1901. 4to. 1902	
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Vierteljahrshefte zur Statistik des Deutschen Reichs. Jahrgang 1902. Heft 3. 4to.	
Labour. Einrichtung und Wirkung der Deutschen Arbeiterversicherung. Denkschrift für die Weltausstellung zu Paris, 1900, im auftrage des Reichs-Versicherungsamts. Diagrams, 8vo. 1900	Sir Alfred E. Bateman, K.C.M.G.
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Frankfort. Jahresbericht ueber die Verwaltung des Medicinalwesens die Kranken - Anstalten und die oeffentlichen Gesundheitsverhaeltnisse der Stadt. Jahrgang 1901. 8vo.	,,
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Metallgesellschaft und Metallurgische Gesellschaft. A.G. Comparative Statistics of Lead, Copper, Spelter, Tin, Silver, Nickel, Aluminium, and Quicksilver for 1889-1901. 5 vols., 8vo. and 4to. Frankfort a/M., 1895-1902	Mr. Z. Merton
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Commerce de la Grèce avec les Pays étrangers pendant 1900. 4to.	The Statistical Bureau
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Annali di Statistica. Statistica Industriale. Fasc. 10*a*. Provincia di Livorno. 1902 Bollettino del Ministero degli Affari Esteri. (Current numbers.) 1901-02. 8vo.	The Director-General of Statistics
Bollettino di Statistica e di Legislazione comparata. (Current numbers)	The Ministry of Finance
Cause di Morte nell' anno 1900. Statistica delle. 8vo. Censimento della Popolazione 10 Febbraio, 1901. Vol. 1, Popolazione dei Comuni e delle rispettive frazioni divisa in agglomerata e sparsa. 8vo. 1902 Movimento commerciale del Regno d' Italia nell' anno 1901. Part 3, fol. 1902 Scioperi avvenuti nell' Industria e Agricoltura durante 1900. Statistica degli. 8vo.	The Director-General of Statistics
Japan—	
Financial and Economical Annual of Japan. No. II. Issued by the Department of Finance. 128 pp., 8vo. Tokyo, 1902	The Vice-Minister of Finance

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Justitiëele Statistiek over het Jaar 1901. (Bijdragen tot de Stat. Vol. 20.) 4to. 1902	The Central Statistical Bureau
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Labour. Verslagen der Kamers van Arbeid over 1900 & 1901. 2 vols., 8vo. 1901-02	
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Labour. Aarsberetninger fra Fabrikinspektorerne for (last half of) 1893, 1894, 1896, 1898, and 1900. 4 parts, 8vo.	Sir Alfred E. Bateman, K.C.M.G.
Labour. Arbeiderkommissionens Indstilling i—iii, Forslag til Lov om Tilsyn med arbeide . . . , om Arbeideres Sygeförsikring . . . , om Ulykkesforsikring . . . 3 parts, 8vo. 1888-92	
Labour. Statistiske Undersogelser angaaende Ulykkestilfælde under Arbeide ved Norske Industrielle Virksomheder, 1885 & 1886. 74 pp., 8vo. 1889	
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Boletin quincenal del Centro Comercial del Paraguay. (Current numbers)	The Association
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Censo da População. 1 Dec., 1900. Resultados provisorios. 115 pp., diagram and maps. La. 8vo.	The Director-General of Statistics
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Labour. A collection of Pamphlets dealing with Factory Inspection, Insurance against Accident and Sickness, &c. 8vo. 1888-1902	Sir Alfred E. Bateman, K.C.M.G.
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Commercial Relations of United States with Foreign Countries in 1901. Vol. ii. 8vo.	The Department of State
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Gold, Silver, and Notes, &c., in Circulation. Monthly Statements. (Current numbers.) Sheets	
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Sound Currency. A quarterly publication devoted to currency questions. Vol. ix, No. 3. Sept., 1902.	Purchased
American Economic Association. Publications. Third Series. Vol. iii, No. 2, The Negro in Africa and America: *J. A. Tillinghast*. 8vo. 1902	The Association
Smithsonian Institution. Miscellaneous Collections. Nos. 1259, 1312, 1313, 1314. 8vo. 1902	The Institution
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International—	
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Trade carried by rail and river in India. Accounts for the year 1901-02 and four preceding years. Fol. 1902 Trade and Navigation, Annual Statement of, with Foreign Countries, and Coasting Trade in year ending 31st March, 1902. Vol. 1. Foreign Trade. 36th issue. La. fol. 1902	The Director-General of Statistics
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Annual Statement of Sea-borne Trade and Navigation, 1901-02. Fol. 1902 Report on the Maritime Trade of Bengal for 1901-02. Fol. 1902	The Officiating Collector of Customs, Calcutta
East Indian Railway. Diagrams of Traffic audited and 113th Report of Directors for first half of 1902. Diagrams. Fol.	East Indian Railway Company, London
Canada, Dominion of—	
Sessional Papers. Session 1902. Vols. 1 (in 2 vols.), Auditor-General. 2, Accounts, Estimates, Banks. 3, Insurance. 4, Trade and Commerce. 5, Trade and Navigation. 6, Inland Revenue, Agriculture, Farms. 7, Criminal Statistics, Archives, Public Works. 8, Railways and Canals. 9, Marine and Fisheries. 10, Postmaster, Interior Agriculture and Colonization. Report of Select Standing Committee, 1902. 8vo. 1902 Criminal Statistics for year 1900-01 Food Adulteration. Report on, 1901-02 Geographic Board. 4th Annual Report for year 1901-02. 8vo. 1902 Harbour Commissioners. Reports of, for 1901 Journals of the House of Commons of Canada. Vol. xxxvii. Session 1902. 8vo. Postmaster-General. Report of, for year 1901-02. 8vo. 1902	The Clerk of the House of Commons
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Manitoba. Journals and Sessional Papers of the Legislative Assembly of Manitoba. Vol. 34. Session 1902. 8vo.	The King's Printer, Winnipeg
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HARRISON AND SONS, PRINTERS IN ORDINARY TO HIS MAJESTY, ST. MARTIN'S LANE.

(Corrected to 31st December, 1902.)

ROYAL STATISTICAL SOCIETY.

(FOUNDED 1834. INCORPORATED 1887.)

9, ADELPHI TERRACE,
STRAND, W.C., LONDON.

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Printers in Ordinary to His Majesty.

1902.

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HIS MOST GRACIOUS MAJESTY THE KING

Honorary President.

H.R.H. THE PRINCE OF WALES, K.G.

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ROYAL STATISTICAL SOCIETY.

No. 9, Adelphi Terrace, Strand, W.C., London.

NOTICES TO FELLOWS.

December, 1902.

The Council desire to call the attention of the Fellows to the fact that notwithstanding the change in the name of the Society by the addition of the word "Royal," they are still, in using letters after their names, signifying the membership of the Society, only entitled under Rule 6, to use the letters F.S.S.

Annual Subscriptions are due in advance, on the 1st of January in each year. A Form for authorising a Banker or Agent to pay the Subscription Annually, will be forwarded on application to the Secretary. When convenient, this mode of payment is recommended. Drafts should be made payable to the order of "The Royal Statistical Society," and crossed "*Drummond and Co.*"

To be included in the Ballot at any particular Ordinary Meeting, the Nomination Papers of Candidates for Fellowship must be lodged at the Office of the Society at least six days before the date of such Meeting.

Fellows who may desire to receive Special and Separate Notices of each Paper to be read before the Society at the Ordinary Meetings, should indicate their wishes to the Secretary.

The Ordinary Meetings of the Society are held at 5 p.m., in most cases at **The Society's Rooms**, 9, Adelphi Terrace, W.C.

Particulars of the Papers to be read, and of the time and place of Meeting, will always be found in an advertisement on that page of the "Times" which faces the leading articles, on the Saturday preceding the holding of the Meeting. The advertisement also appears in other London Daily Papers at the same time, and to these announcements the attention of Fellows is particularly directed.

The *Journal* is issued on the last day of the months of March, June, September, and December in each year. Copies are delivered *carriage free* to all Fellows of the Society. Arrangements have been made for their delivery to those Fellows resident in London and the suburbs by Messrs. Carter Paterson & Co., and to most provincial Fellows by that firm's agents. In the case of a few Fellows resident in the United Kingdom, delivery is made by Parcel Post, whilst all copies for Colonial and Foreign Fellows are sent by mail. British Fellows who do not get their *Journals* within the first fourteen days of the months of April, July, October, and January respectively, are earnestly requested to communicate with the Society without delay, as the carriers cannot be expected to investigate complaints or be responsible for loss unless prompt notice be given.

The Library and the Reading Room are open daily for the use of Fellows from 10 a.m. to 5 p.m., excepting on Saturdays, when they are closed at 2 p.m.

It is requested that any change of address may be notified promptly to the Secretary, so that delay or error in forwarding communications or the Journal, to Fellows may be avoided.

By Order of the Executive Committee.

CALENDAR FOR THE SESSION 1902-03.

1902	MON.	TUES.	WED.	THURS.	FRI.	SATUR.	SUN.	1903	MON.	TUES.	WED.	THURS.	FRI.	SATUR.	SUN.
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Particulars of the Papers to be read, and of the time and place of Meeting, will always be found in an advertisement on that page of the "Times" which faces the leading articles, on the Saturday preceding the holding of the Meeting. The advertisement also appears in other London Daily Papers at the same time, and to these announcements the attention of Fellows is particularly directed.

The latest arrangements as to Papers and Meetings up to the time of going to press will be found at page vii in each issue of the *Journal*.

THE ANNUAL GENERAL MEETING

WILL BE HELD ON TUESDAY, THE 16TH JUNE, 1903, AT THE SOCIETY'S ROOMS.

Programme of the Session 1902-3.

THE

ORDINARY MEETINGS

WILL BE HELD

IN THE MONTHS OF NOVEMBER TO JUNE,

IN MOST CASES

AT THE SOCIETY'S ROOMS,

9, Adelphi Terrace, Strand, W.C., London.

The Chair will be taken at 5 p.m. *on the following dates:—*

Tuesday,	Jan. 20.	Tuesday,	April 21.
,,	Feb. 17.	,,	May 19.
,,	March 17.	,,	June 16.

SEE NOTE ON THE OPPOSITE PAGE.

The following Papers have been read (*Dec.*, 1902):—

The President's Inaugural Address. By MAJOR PATRICK GEORGE CRAIGIE, C.B. (Delivered 18th November.)

"English Railway Statistics." By WILLIAM MITCHELL ACWORTH, M.A. (Read 16th December.)

The following Papers have been offered; and from these and from others that may yet be offered, a selection will be made by the Council:—

"Finance of Federal Government for the United Kingdom." By THE HON. THOMAS A. BRASSEY. (To be read 20th January, 1903.)

"A Census of the Empire." By J. A. BAINES, C.S.I. (To be read 17th February, 1903.)

"Agricultural Wages in England and Wales for Sixty Years." By A. WILSON FOX, C.B.

"The Organization of Local Statistics." By JOHN MACDONELL, C.B., LL.D.

"General Statistics of Italy." By BOLTON KING, B.A.

"Statistics of London Traffic." By EDGAR J. HARPER.

"Edible Plants of India in their relation to Food Prices in England (being a continuation of a paper by Colonel Sykes)." By WILLIAM DIGBY, C.I.E.

Report of the Society's Committee on the Production and Consumption of Meat and Milk.

ROYAL STATISTICAL SOCIETY,

AN OUTLINE OF ITS OBJECTS.

THE *Royal Statistical Society* was founded, in pursuance of a recommendation of the British Association for the Advancement of Science, on the 15th of March, 1834; its objects being, the careful collection, arrangement, discussion and publication, of facts bearing on and illustrating the complex relations of modern society in its social, economical, and political aspects,—especially facts which can be stated numerically and arranged in tables;—and also, to form a Statistical Library as rapidly as its funds would permit.

The Society from its inception has steadily progressed. It now possesses a valuable Library of about 40,000 volumes, and a Reading Room. Monthly meetings are held from November to June, which are well attended, and cultivate among its Fellows an active spirit of investigation; the Papers read before the Society are, with an abstract of the discussions thereon, published in its *Journal*, which now consists of sixty-five annual volumes, and forms of itself a valuable library of reference.

The Society has originated and statistically conducted many special inquiries on subjects of economic or social interest, of which the results have been published in the *Journal*, or issued separately.

To enable the Society to extend its sphere of useful activity, and accomplish in a yet greater degree the various ends indicated, an increase in its numbers and revenue is desirable. With the desired increase in the number of Fellows, the Society will be enabled to publish standard works on Economic Science and Statistics, especially such as are out of print or scarce, and also greatly extend its collection of Foreign works. Such a well-arranged Library for reference as would result does not at present exist in England, and is obviously a great *desideratum.*

The Society is cosmopolitan, and consists of Fellows and Honorary Fellows, forming together a body, at the present time, of about *one thousand* Members.

The Annual Subscription to the Society is *Two Guineas*, and at present there is no entrance fee. Fellows may, on joining the Society, or afterwards, compound for all future Annual Subscriptions by a payment of *Twenty Guineas.*

The Fellows of the Society receive gratuitously a copy of each part of the *Journal* as published quarterly, and have the privilege of purchasing back numbers at a reduced rate. The Library (reference and circulating), and the Reading Room, are open daily, for the convenience of Members.

Nomination Forms and any further information will be furnished, on application to the *Secretary*, *Royal Statistical Society*, 9, *Adelphi Terrace*, *Strand*, *W.C.*, *London.*

ROYAL STATISTICAL SOCIETY.

LIST OF THE SOCIETY'S PUBLICATIONS.

Note.—Sets—or Copies of any number—of the *Journal*, or of the other Publications of the Society (if not out of print), can be obtained at the Offices of the Royal Statistical Society, 9, Adelphi Terrace, Strand, W.C., or through any bookseller.

	Price.
Journal (published quarterly)— Vols. 1—65. 8vo. 1838-1902	5*s.* each part*
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First Report of a Committee on Beneficent Institutions. I. The Medical Charities of the Metropolis. 68 pp. 8vo. 1857	2*s.* 6*d.*
Statistics of the Farm School System of the Continent (reprinted from the *Journal*, with a Preface and Notes). 63 pp. 8vo. 1878	1*s.*
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Note.—One or two numbers of the *Journal* and Part ii of the Index are now out of print.

* Before 1870 the price varied.

ROYAL STATISTICAL SOCIETY.

List of the Society's Medallists,

With the Date of the Awards.

THE GUY MEDAL

Has been awarded in Gold *to*—

1892. Mr. Charles Booth.
1894. Sir Robert Giffen.
1900. Mr. J. A. Baines.

In Silver *to*—

1893. Sir John Glover.
1894. Mr. A. Sauerbeck.
1895. Mr A. L. Bowley.
1897. Mr. Frederic J. Atkinson.
1899. Mr. Charles S. Loch.
1900. Mr. R. F. Crawford.
1901. Mr. T. A. Welton.
1902. Mr. Reginald H. Hooker.

THE HOWARD MEDAL.

1875. Mr. Edward Smith.
1876. Dr. J. C. Steele.
1878. Dr. John Martin *and* Captain H. Hildyard (*extra prize*).
1879. Miss B. Jourdan.
1880. Mr. H. P. Potter.
1881. Dr. F. Pollard.
1882. Mr. D. Manson Fraser.
1883. Dr. R. D. R. Sweeting.
1884. Dr. Clement Dukes.
1893. Dr. Hugh R. Jones.
1895. Mr. John Watson.
1897. Dr. James Kerr.
1899. Miss Rosa M. Barrett.
1900. Dr. J. F. J. Sykes.

ROYAL STATISTICAL SOCIETY.

Founded 15*th March*, 1834, *Incorporated* 31*st January*, 1887.

LIST OF THE FORMER

Patron and Presidents of the Society.

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	Period.
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Honorary President.

H.R.H Albert Edward Prince of Wales, K.G.	1872–1901

Presidents.

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The Rt. Hon. Leonard H. Courtney, M.A., M.P.	1897–99
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LIST OF FELLOWS.

Those marked *c* have Served or are Serving on the Council.
,, *d* have made Presentations to the Library.
,, *p* have contributed Papers to the Society.

*Those marked thus * have compounded for their Annual Subscriptions.*
The names of Present Members of Council are printed in SMALL CAPITALS.

Year of Election.		
1900	*d*	Abbott, Samuel W., M.D., 142, *State House*, *Boston*, *Mass.*, *U.S.A.*
1900		Ablett, Cecil Gerard, 1, *Guardian Chambers*, *Port Elizabeth.*
1888		Ackland, Thomas G., F.I.A., 10, *Church-crescent*, *Muswell-hill*, *Highgate*, *N.*
1888	*c d p*	Acland, The Right Hon. Arthur Herbert Dyke, M.A., *Westholme*, *Scarborough.*
1898		Acland, Sir C. Thomas Dyke, Bart., *Killerton*, *Exeter.*
1892	*c d p*	ACWORTH, WILLIAM MITCHELL, M.A., *Alice Holt, near Farnham.*
1891		Addington, Right Hon. Lord, 24, *Prince's-gate*, *S.W.*
1901		Addis, Charles Stuart, *Hong Kong and Shanghai Bank*, *Shanghai*, *China.*
1902		Adeane, Charles Robert Whorwood, J.P., *Babraham Hall, near Cambridge.*
1890		Adler, Marcus Nathan, M.A., F.I.A., 1, *Bartholomew-lane*, *E.C.;* *and* 22, *Craven-hill*, *W.*
1884		Agius, Edward Tancred, 3, *Belsize-grove*, *N.W.*
1879		Akers-Douglas, The Right Hon. Aretas, M.P. *Chilston-park*, *Maidstone*, *Kent.*
1876		Aldwinckle, Thomas Williams, 20, *Denman-street*, *London Bridge*, *S.E.*
1898		Alexander, Alfred J., *Bristol Waterworks Company*, *Bristol.*

Year of Election.		
1896	*d*	Allan, Francis John, M.D., *City of Westminster Hall, W.C.*
1889		Allen, Frank, J.P., 73, *Tinakire-road, Wellington, N.Z.*
1896		Allen, George Berney, *Free Chase, Warminglid, Hayward's Heath.*
1876		Allen, John T. R., *Greeve Gate-road, Hunstanton, Norfolk.*
1899	*d*	Allen, Richard James, *Cotton Assocn., Ltd., St. Mary's-gate, Manchester.*
1898		Allen, William Henry, *Bromham House, Bromham, near Bedford.*
1880		*Allerton, The Right Hon. Lord, *Chapelallerton, Leeds.*
1893		Anderson, Herbert William, *Fairfield, Broom-road, Teddington.*
1889		Anderson, John Andrew (Alderman), *Faversham, Kent.*
1886		Andras, Henry Walsingham, F.I.A., 50, *Regent-street, W.*
1902	*d*	Angier, Theodore Vivian Samuel, 2, *Whittington-avenue, E.C.*
1871		Angus, R. B., *Montreal, Canada.*
1897		Anning, Edward Herbert, F.R.G.S., 78, *Cheapside, E.C.*
1884		Anning, Edward James, 78, *Cheapside, E.C.*
1895		Arbuthnot, Gerald Archibald, *Hollingbourne Manor, Maidstone.*
1872		*Archibald, William Frederick A., M.A., 114, *Royal Courts of Justice, Strand, W.C.*
1892		Argyle, Jesse, 67, *Mildmay-park, N.*
1897		Arnold, William, 11, *Albion-street, Hanley, Staffs.*
1888		Asch, William, 7, *Lothbury, E.C.*
1900		Aston, William Henry, 46, *Eagle Wharf-road, New North-road, N.*
1888	*d*	Atkinson, Charles, 56, *Palewell-park, East Sheen.*
1893	*d p*	Atkinson, Frederic J. (*Deputy Auditor General*), *c/o King, King & Co.*, 45, *Pall Mall, S.W.*
1892		*Atkinson, Robert Hope, *New York Life Ins. Co., Place d'Armes, Montreal.*
1865	*c d p*	AVEBURY, RIGHT HON. LORD, P.C., F.R.S. (*Honorary Vice-President*), *High Elms, Farnbro', R.S.O., Kent.*

Year of Election.		
1893		Aves, Ernest, M.A., 5, *Lexden-terrace, Tenby, South Wales.*
1872	c d	*Babbage, Major-General Henry Prevost, *Mayfield, Lansdown, Cheltenham.*
1872		*Backhouse, Edmund, *Trebah, Falmouth.*
1892		Bacon, George Washington, F.R.G.S., 127, *Strand, W.C.*
1855	c d	BAILEY, ARTHUR HUTCHESON, F.I.A., 26, *Mount Ephraim-road, Streatham, S.W.*
1900		Baily, James Thomas Herbert, 56, *Charing Cross, S.W.*
1881	c d p	BAINES, JERVOISE ATHELSTANE, C.S.I. (*Hon. Foreign Secretary*), *Kidlington, Oxon.*
1887		Baldwin, Alfred, M.P., J.P., *Wilden House, Stourport, Worcestershire.*
1878		Balfour, The Right Hon. Arthur J., M.P., F.R.S., 10, *Downing-street, S.W.*
1886		Balfour, The Right Hon. Gerald William, M.P., 3, *Whitehall Court, S.W.*
1881	d	*Barfoot-Saunt, William Henry, *Oxenden Hall, Market Harborough, Leicestershire.*
1902		Barham, George, J.P., *Snape, Wadhurst, Sussex.*
1899		*Barnardo, Thomas John, F.R.C.S., Edin., *St. Leonard's Lodge, Surbiton.*
1887		‡Barnes, Joseph Howard, F.I.A., 70, *Lombard-street, E.C.*
1885		Barratt, Thomas J., 75, *New Oxford-street, W.*
1887		*Barrett, Thomas Squire, F.Z.S., M.A.I., &c., *Rose Cottage, Millfield-road, Widnes.*
1878		Barry, Sir Francis Tress, Bart., M.P., *St. Leonard's-hill, Windsor.*
1888		*Bartlett, Frederick W., *Paymaster General's Office, Whitehall, S.W.*
1889	d	Bastable. Professor C. F., M.A., LL.D., 6 *Trevelyan-trr., Brighton-rd, Rathgar, Co. Dublin.*
1877	c d p	BATEMAN, SIR ALFRED EDMUND, K.C.M.G. (*Honorary Vice-President*), *Board of Trade, Whitehall-gardens, S.W.*

Year of Election.		
1877		Bayfield, Arthur, 95, *Colmore-row, Birmingham.*
1873		*Baynes, Alfred Henry, F.R.G.S., 19, *Furnival-street, Holborn, E.C.*
1875	*d*	*Beardsall, Francis E. M., 63, *Brown-street, Manchester.*
1875	*d*	*Beaufort, William Morris, F.R.A.S., F.R.G.S. 18, *Piccadilly, W.*
1882	*d*	*Beazeley, Michael Wornum, M.A., *Worting, Basingstoke.*
1884		Bedford, James, *Woodhouse Cliff, Leeds.*
1901		Beech, David (*Messrs. Booker Bros., Ltd.*), *Georgetown, Demerara.*
1882	*c d*	*Beeton, Henry Ramie (6*a*, *Austin Friars, E.C.*) 9, *Maresfield-gardens, Hampstead, N.W.*
1899	*d*	Beeton, Mayson M., B.A., *Horsey Hall, Norfolk.*
1886	*d*	Begg, Ferdinand Faithfull, *Bartholomew House, E.C.*
1890		Bell, Frederick, F.I.A., *Imperial Life Office*, 1, *Old Broad-street, E.C.*
1892	*d*	Bell, Frederick William, *P.O. Box* 250, *Cape Town, S. Africa*
1884	*d*	Bell, James T., *Northcote, Dowanhill, viâ Glasgow*
1901	*d*	Bellingham, Archer, 6, *Mandeville-place, W.*
1878	*d p*	Bence-Jones, Henry R., B.A., *Board of Trade*, 1, *Whitehall, S.W.*
1897		Bennett, William, *City Mutual Life Ass. Soc., Melbourne.*
1888		*Benson, Godfrey R., 23, *The Grove, Boltons, S.W.*
1895		Bentinck, Lord Henry, M.P., 13, *Grosvenor-place, S.W.*
1884		*Bentley, Richard, F.R.G.S., *Upton, Slough, Bucks.*
1884	*d*	Berg, Wilhelm, 21, *Mincing-lane, E.C.*
1890		Berry, Arthur, M.A., *King's College, Cambridge.*
1891		Berry, Oscar, C.C., F.C.A., *Monument House, Monument-square, E.C.*
1900		Bethell, Alfred James, *Middlesthorpe Lodge, Dringhouses, York.*
1875		Bevan, Thomas, *Stone-park, near Dartford, Kent.*
1869	*p*	*Beverley, The Hon. Mr. Justice Henry, *Nascot Lodge, Watford.*

Year of Election.		
1891	*d*	Biddle, Daniel, M.R.C.S., L.S.A., *Charlton Lodge, Kingston-on-Thames.*
1888		Billinghurst, Henry F., 35, *Granville-park, Blackheath, S.E.*
1902		Bisset-Smith, George Tulloch, 55, *Carlton-place, Aberdeen.*
1899	*c*	BIRCHENOUGH, HENRY, M.A., *Westbank, Macclesfield.*
1901		Bird, Harry, C.C., *Strathmore, Chingford, Essex.*
1881		Bishop, George, 113, *Powis-street, Woolwich.*
1898		Blount, Edward Thomas Joseph, F.F.A., A.I.A, *Standard Insurance Co., Shanghai, China.*
1898	*c d*	*BLYTH, SIR JAMES, BART., *Stansted, Essex.*
1884	*d*	Boileau, John Peter H., M.D., &c. (*Brigade-Surgeon Lieut.-Col.*), *Trowbridge, Wilts.*
1881		Bolitho, Thomas Robins, *Trengwainton, Hea Moor, R.S.O., Cornwall.*
1887		Bolling, Francis, 2, *Laurence Pountney-hill, E.C.*
1890		Bolton, Edward, J.P., *Clifton House, Beverley-road, Hull.*
1885	*c d*	*Bonar, James, M.A., LL.D., *Civil Service Commission, Burlington-gardens, W.*
1887		Bond, Edward, M.P., *Elm Bank, Hampstead, N.W.*
1898		Bone, Albert Ebenezer, *Knutsford House, Larkhall-lane, Clapham, S.W.*
1885	*c d p*	BOOTH, CHARLES, D.Sc., F.R.S. (*Hon. Vice-President*), 8, *Adelphi-terrace, W.C.*
1900		Bottomley, Harry, *Borough Treasurer, Guildhall, Plymouth.*
1899	*d*	Bourne, Arthur (*Equitable Life Office*), 120, *Broadway, New York, U.S.A.*
1894	*c d p*	BOWLEY, ARTHUR LYON, M.A., *Waldeck House, Southern-hill, Reading.*
1879		Bowley, Edwin, 29, *Croftdown-road, Highgate, N.W.*
1894	*c d p*	BRABROOK, EDWARD WILLIAM, C.B., F.S.A., (*Vice-President*), 28, *Abingdon-street, S.W.*
1883		Braby, Frederick, F.C.S., F.G.S., *Bushey Lodge, Teddington.*
1875		Braby, James, J.P., 28, *First Avenue, Hove, Sussex.*
1888	*d*	Bramwell, Sir Frederick J., Bart., D.C.L., F.R.S., 5, *Great George-street, Westminster, S.W.*

Year of Election.		
1900	*d p*	Branford, Victor Verasis, M.A., 5, *Old Queen-street, Westminster, S.W.*
1873	*c d p*	BRASSEY, THE RIGHT HON. LORD, K.C.B. (*Honorary Vice-President*), 4, *Great George-st., S.W.; and* 24, *Park-lane.*
1864		*Braye, The Right Hon. Lord, *Stanford Hall, Market Harborough.*
1902		Broadbent, Albert, 19, *Oxford-road, Manchester.*
1883		Brooke, C. B., 16, *Leadenhall-street, E.C.*
1874		Broom, Andrew, A.C.A., *Eaglehurst, Staines, Middlesex.*
1895	*d*	Broomhall, George James Short, 17, *Goree Piazzas, Liverpool.*
1878		Brown, Sir Alexander Hargreaves, Bart., M.P., 12, *Grosvenor-gardens, S.W.*
1901		Brown, B. Hal., *London & Lancs. Life Ins. Co., Montreal, Canada.*
1896		*Brown, Daniel Maclaren, junr., *P.O. Box* 187, *Corra Linn, Port Elizabeth.*
1893		Brown, James William Bray, F.S.A.A., *Corporation-street, Birmingham; and Moseley, Worcestershire.*
1890		Browne, Edward William, 33, *Poultry, E.C.*
1901		Browne, Henry Doughty, J.P., 10, *Hyde Park-terrace, W.*
1875	*p*	Browne, Thomas Gillespie C., F.I.A., 11, *Lombard-street, E.C.*
1886		*Brunner, Sir John Tomlinson, Bart., M.P., *Druid's Cross, Wavertree, Liverpool.*
1900		Bullock, Charles J., Ph.D., *Williams College, Williamstown, Mass., U.S.A.*
1880	*c d p*	*Burdett, Sir Henry Charles, K.C.B., *The Lodge, Porchester-square, W.*
1873		*Burdett-Coutts, The Right Hon. the Baroness, 1, *Stratton-st., W.; and Holly Lodge, Highgate.*
1884	*d*	Burdett-Coutts, William, M.P., 1, *Stratton-street, Piccadilly, W.*
1902		Burgess, James Henry, F.S.A.A., 14, *Albert-crescent, Richmond-road, Lincoln.*
1897		Burke, David, A.I.A., F.I. Inst., *Royal Victoria Life Ins. Co., Montreal, Canada.*
1895		Burrup, John Arthur Evans, *The Custom House, Calcutta, India.*
1880		Burt, Frederick, F.R.G.S., *Pinewood, Stoke Poges, R.S.O. nr. Slough, Bucks.*
1901		Burt, George Stephen, 4, *Lothbury, E.C.*

Year of Election.			
1872			*Burton, The Right Hon. Lord, *Chesterfield House, Mayfair, W.; and Rangemore, Burton-on-Trent.*
1898			Burton, William Roland, *c/o Colonial Mutual Life Ass. Soc., Cape Town.*
1886			Bush, Baron William de, F.C.S., 6, *Albert Hall Mansions, Kensington Gore, W.*
1893	d		*Bushill, Thomas William, *Longfield, Bubbenhall, viâ Kenilworth.*
1892			Byworth, Charles Joseph, J.P., F.S.A.A., 13, *Thurleigh-road, Balham, S.W.*
1902			Caillard, Sir Vincent Henry P. (*K* 3, *The Albany, W.*), *Wingfield, near Trowbridge.*
1897			Cairnes, Frederick Evelyn, *Killester House, Raheny, Co. Dublin.*
1896			Campbell, Charles William, C.M.G. *H.B.M. Consulate General, Shanghai, China.*
1879			Campbell-Colquhoun, Rev. John Erskine, *Chartwell, Westerham, Kent.*
1889		p	Cannan, Edwin, M.A,, 1, *Wellington-square, Oxford.*
1891	d		Cannon, Henry W. (*Chase National Bank*), 83, *Cedar-street, New York, U.S.A.*
1900	d		Canovai, Commendatore Tito, *Bank of Italy, Rome.*
1872			*Carillon, J. Wilson, F.S.A., F.R.G.S., *The Chimes, Richmond, Surrey.*
1893			*Carpenter, Henry Saunders, *Beckington House, Weighton-road, Anerley, S.E.*
1888			Carr, Ebenezer, 24, *Coleman-street, Bank, E.C.*
1900			Carter, Adolphus Hugh,
1890			*Carter, Eric Mackay, A.I.A., F.C.A., 33, *Waterloo-street, Birmingham.*
1883	d		*Carter, Joseph Robert, *Courtfield, Ross-road, Wallington, Surrey.*
1878			*Casley, Reginald Kennedy, M.D., *Ipswich.*
1881			Causton, Richard Knight, M.P., 12, *Devonshire-place, Portland-place, W.*

Year of Election.			
1884	d		*Chailley-Bert, Joseph, 44, *Chaussée d'Antin, Paris.*
1902			Chalmers, Patrick R., 156, *Cromwell-road, S.W.*
1880			*Chamberlain, The Right Hon. Joseph, M.P., F.R.S., 40, *Prince's-gardens, S.W.*
1901	d		Chance, Sir William, Bart., M.A., J.P., *Orchards, near Godalming.*
1898			Chapman, Edward Stuart, *The Stamp Office, Deansgate, Manchester.*
1886	d		*Chapman, Samuel, F.I.Inst., 227—228, *Gresham House, Old Broad-st., E.C.*
1901			Chapman, Walter William, 4, *Mowbray House, Norfolk-street, Strand.*
1892			*Chatham, James, F.I.A., F.F.A., 98, *Inverleith-place, Edinburgh.*
1901			Cherry, Francis, 45, *Lombard-street, E.C.*
1851			*Cheshire, Edward, 3, *Vanbrugh-park, Blackheath, S.E.*
1886	d	p	*Chisholm, George Goudie, M.A., B.Sc., F.R.G.S., 59, *Drakefield-road, Upper Tooting.*
1900			Clark, John S., 110, *Boylston-street, Boston, Mass., U.S.A.*
1901			Clark, William Henry, B.A., 1, *Temple-gardens, E.C.*
1888			Clarke, C. Goddard, J.P., *South Lodge, Champion-hill, S.E.*
1882	d		*Clarke, Sir Ernest, M.A., F.L.S., F.S.A., 13*a*, *Hanover-square, W.*
1877			*Clarke, Henry, L.R.C.P., *H.M. Prison, Wakefield, Yorks.*
1890			Clarke, Henry, J.P., *Cannon Hall, Hampstead, N.W.*
1899			Claughton, Gilbert H., *The Priory, Dudley.*
1899			Clay, Walter Gorst, M.A., 5, *Paper-buildings, Temple, E.C.*
1869	c		Cleghorn, John, 3, *Spring-gardens, S.W.*
1853			Clirehugh, William Palin, F.I.A., 66, *Cornhill, E.C.*
1887	c d		COHEN, NATHANIEL LOUIS, 11, *Hyde Park-terrace, W.*
1859			Coles, John, F.I.A., 39, *Throgmorton-street, E.C.*
1892		p	*Collet, Miss Clara Elizabeth, M.A., 43, *Parliament-street, S.W.*
1887			Collet, Sir Mark Wilks, Bart., 2, *Sussex-square, W.; and St. Clere, Sevenoaks.*

Year of Election.		
1895		Collins, Howard James, *The General Hospital, Birmingham.*
1882		*Collum, Rev. Hugh Robert, M.R.I.A., F.R.C.I., *Leigh Vicarage, near Tonbridge, Kent.*
1891	*d*	Cooper, Joseph, 60, *Park-street, Farnworth, near Bolton.*
1883		Corgialegno, M., *George-yard, Lombard-street, E.C.*
1901		Cornish, Henry James, 90, *Cambridge-gardens, W.*
1889		Cornwallis, Fiennes Stanley Wykeham, *Linton-park, Maidstone, Kent.*
1880	*d*	Cotterell-Tupp, Alfred, LL.D., 17, *Devonshire-terrace, Hyde-park, W.*
1899		Court, Stephen E., *Municipal Offices, P.O. Box* 1,049, *Johannesburg.*
1862	*c d p*	**COURTNEY, THE RIGHT HON. LEONARD HENRY**, M.A. (*Honorary Vice-President*), 15, *Cheyne Walk, Chelsea, S.W.*
1896	*d*	Cox, Harold, 6, *Raymond-buildings, Gray's Inn, W.C.*
1902		*Coxon, William, 15, *Elsworthy-terrace, N.W.*
1901		Coyne, William P., M.A., *Department of Agriculture, Upper Merrion-street, Dublin.*
1888		Craggs, John George, F.C.A. (*Craggs, Turketine & Co.*), 52, *Coleman-street, E.C.*
1874	*c d p*	**CRAIGIE, MAJOR PATRICK GEORGE**, C.B. (*President*), 6, *Lyndhurst-road, Hampstead; and* 3, *St. James's-square, S.W.*
1902		Craven, Edward Joseph E., *Statistical Office, Custom House, E.C.*
1890	*c d p*	**CRAWFORD, RICHARD FREDERICK**, 4, *Whitehall-place, S.W.*
1891		*Crawley, Charles Edward, *Hyderabad, Deccan, India.*
1894		Crease, Major-General Sir John Frederick, K.C.B., *Ince, Guildford.*
1878		Crewdson, Ernest, *Castle Meadows, Kendal.*
1892		Cripps, Charles Alfred, K.C., M.P., 1, *Essex-court, Temple, E.C.*
1890		Croal David Octavius, *Financial News,* 11, *Abchurch-lane, E.C.*
1902		Crosfield, Charles James, J.P., 323, *Vauxhall-road, Liverpool.*
1900		Crowley, Michael, F.C.A., F.S.A.A., 16, *College Green, Dublin.*

Year of Election.		
1901		Crowther, William Harding, 15, *Broomfield-road, Ealing, W.*
1883	c d	Cunningham, Rev. William, M.A., D.D., 2, *St. Paul's-road, Cambridge.*
1879	d	Curtis, Robert Leabon, F.S.I., J.P., 120, *London Wall, E.C.*
1873		Czarnikow, Cæsar, 29, *Mincing-lane, E.C.*
1900		Da Costa, José Simao (*Garantia da Amazonia*), *Belem do Para, Brazil.*
1900		Dale, Charles Ernest, F.S.A.A., *Old Calabar, West Africa.*
1886		Dale, Sir David, Bart., *West Lodge, Darlington.*
1888		Dangerfield, Athelstan, A.C.A., 56, *Cannon-street, E.C.*
1898	d	*Danson, Francis Chatillon, *Liverpool and London Chambers, Liverpool.*
1901	d	Danvers, Ernest, 475, *Piedad, Buenos Ayres.*
1880	c d p	DANVERS, FREDERICK CHARLES, 50, *Egmont-road, Sutton, Surrey.*
1897	d p	*Darwin, Major Leonard, R.E., F.R.G.S., 12, *Egerton-place, S.W.*
1892		Dash, William Lawson, J.P., 301, *Pitt-street, Sydney, N.S.W.*
1901		Davar, Sohrab R., M.S.A., 9, *Elphinstone Circle, Fort, Bombay.*
1901		Davies, Dixon Henry, 12, *Booth-street, Piccadilly, Manchester.*
1869		Davies, James Mair, 168, *St. Vincent-street, Glasgow.*
1896		Davies, Theodore Llewelyn, *The Treasury, Whitehall, S.W.*
1899		D'Avigdor-Goldsmid, Osmond Elim, *Somerhill, Tonbridge, Kent.*
1888		Dawson, G. J. Crosbie, M. Inst. C.E., F.G.S., *North Staffordshire Railway, Stoke-upon-Trent.*

Year of Election.		
1899		Dawson, Miles Menander, 11, *Broadway*, *New York*, *U.S.A.*
1897	*d*	Deane, Albert Bickerton, 35, *Great George-street*, *Westminster*, *S.W*
1880		Debenham, Frank, 1, *Fitzjohn's-avenue*, *Hampstead*, *N.W.*
1885	*d*	De Broë, Emile Conrad De Bichin, *Walden Lodge*, *Carlisle-road*, *Eastbourne.*
1879		*De Ferrieres, The Baron Du Bois, J.P., *Bay's Hill House*, *Cheltenham.*
1898		Defries, Wolf, B.A., 147, *Houndsditch*, *E.C.*
1900	*d*	De la Plaza, Victorino, LL.D. (*Buenos Ayres Ry. Co.*), 10, *Park-place*, *St. James's*, *S.W.*
1891		Denne, William, *Phillimore*, *Wetherill-road*, *New Southgate*, *N.*
1898	*d*	Denny, John Thavies, 42, *Devonport-road*, *Shepherd's Bush*, *W.*
1873		Dent, Edward, 2, *Carlos-place*, *Grosvenor-square*, *W.*
1887		Dent, George Middlewood, 13, *Chambres-road*, *Southport.*
1889		De Rothschild, Leopold, J.P., D.L. (Alderman), 5, *Hamilton-place*, *Piccadilly*, *W.*
1892		De Smidt, Henry, C.M.G., *The Treasury*, *Cape Town*, *Cape Colony.*
1898		Dever-Summers, Frank, 39, *Hervey-road*, *Blackheath*, *S.E.; and National Liberal Club*, *S.W.*
1892		Dewar, William Nimmo (*Standard Life Assurance Co.*), 28, *Elizabeth-street*, *Sydney*, *N.S.W.*
1900		Dewsnup, Ernest Ritson, M.A., *Technical College*, *Huddersfield.*
1890		Dickinson, Willoughby Hyett, 51, *Campden-hill-road*, *W.*
1902	*d*	Digby, William, C.I.E., *Trafalgar-buildings*, *Charing Cross*, *S.W.*
1866	*c d p*	*DILKE, THE RIGHT HON. SIR CHARLES WENTWORTH, BART., M.P., LL.M., 76, *Sloane-street*, *S.W.*
1897		Dobson, Goland Burton, 58, *Lincoln's Inn Fields*, *W.C.*
1889		Double, Alfred, C.C., 92 *and* 93, *Fore-street*, *E.C.*
1889		Doubleday, William Bennett, 123, *Tulse-hill*, *S.W.*
1899	*d*	Dougharty, Harold, A.I.A., F.C.I.S., *London and Lancs. Life Office*, *Cornhill*, *E.C.*
1878	*d*	Doyle, Patrick, C.E., F.G.S., M.R.A.S., *Calcutta.*

Year of Election.		
1894	c d p	DRAGE, GEOFFREY, M.A., 20, *Loundes-square, S.W.*
1890		Drummond, Charles James, 21, *Dalmore-road, West Dulwich, S.E.*
1897	d	Dudfield, Reginald, M.A., M.B., 19, *Blomfield-road, Maida Vale, W.*
1895	c	Dudley, His Excellency The Earl of, *Dublin.*
1875	d p	Dun, John, *Parr's Bank, Bartholomew-lane, E.C.*
1902		Dunbar, William Cospatrick, C.B. *Somerset House, Strand, W.C.*
1878	c	*Dunraven, The Right Hon. the Earl of, K.P., C.M.G., *Kenry House, Putney Vale, S.W.*
1885		Dyer, William John, 17, *Montpelier-row, Blackheath, S.E.*
1888		Earnshaw, Jacob, *Prudential Assnce. Bldgs.,*78, *King-st. Manchester.*
1888	d	Eckersley, J. C., M.A., F.R.G.S., *Ashfield, Wigan.*
1883	c d p	EDGEWORTH, PROFESSOR FRANCIS YSIDRO, M.A., D.C.L., 5, *Mount Vernon, N.W.; and All Souls', Oxford.*
1896		Edwards, Charles Lewis, 299, *Bartolonie Mitre, Buenos Aires.*
1880		Egerton of Tatton, The Right Hon. Earl, 7, *St. James's-square, S.W.*
1885	c d p	Elliott, Sir Thomas Henry, K.C.B., *Board of Agriculture,* 4, *Whitehall-place, S.W.*
1885		Elliott, William, *P.O. Box* 42, *Lower St. George's-st., Cape Town.*
1895		Elliott, William, junr., *P.O. Box* 1583, *Johannesburg, South Africa.*
1895		Elwell, William Henry, *Howard House,* 4, *Arundel-street, Strand, W.C.*
1889	d	Erhardt, William, 7, *Bury-street, Bloomsbury, W.C.*
1896		Everett, Percy Winn, *Oaklands, Elstree, Herts.*

Year of Election.		
1892		Faber, Harald. *Fiona, Lennard-road, Penge, S.E.*
1875		Faraday, Frederick J., 17, *Brazennose-street, Manchester.*
1888		Farlow, A. R. King, 4, *King-street, Cheapside, E.C.*
1889	*d*	Farnworth, Edward James, 26. *Winckley-square, Preston.*
1900		Farrer, The Right Hon. Lord, *Abinger Hall, Dorking.*
1890		Faulks, Joseph Ernest, B.A., F.I.A., 187. *Fleet-street, E.C.*
1893		*Fawcett, Mrs. Millicent Garrett, 2, *Gower-street, W.C.*
1882		Fell, Arthur, M.A., 46, *Queen Victoria-street, E.C.*
1894		Fellows, Rowland Hill, F.I.A., 32, *Honiton-road, Kilburn, N.W.*
1893		Fenwick, John Fenwick, *Spencer House, Wimbledon-common.*
1894		Field, John William (*Gas Light and Coke Company*), *Horseferry-road, Westminster, S.W.*
1899		Finch, Henry Hobson, 3, *Whitehall-court, S.W.*
1889		*Finlay, Major Alexander, *The Manor House, Little Brickhill, Bletchley.*
1884	*d*	*Finnemore, The Hon. Mr. Justice R. I., F.R.G.S., *Supreme Court, Pietermaritzburg, Natal.*
1892		Fisher, George, J.P., M.H.R. (*Chevalier of the Order of Crown of Italy*), *Hill-street, Wellington, New Zealand.*
1900		Fisher, Professor Irving, Ph.D., *Yale University, New Haven, Conn., U.S.A*
1888		Fisher, Walter Newton, F.C.A., 4, *Waterloo-street, Birmingham.*
1898		Fisk, George William Victor, 142, *Holborn-bars, E.C.*
1885		*Fitz-Gerald, Lt.-Col. Wm. G., M.A., F.R.Hist.S., F.R.S.L., *Conneragh, Youghal, Ireland.*

Year of Election.		
1900	d	Fleming, Owen, Assoc. R.I.B.A., 3, *Warwick-street, Charing Cross, S.W.*
1896		Fletcher, Benton,
1893	d p	*Flux, Professor Alfred William, M.A., *Montreal University, Montreal, Canada.*
1882		Foley, Patrick James (*Pearl Insurance Company*), *Adelaide-place, London Bridge, E.C.*
1896	d	Folkmar, Professor Daniel, D.S.S., D.U., Paris. *University of Chicago, Ill., U.S.A.*
1889		Foot, Alfred, 8, *Park Lane Mansions, Croydon.*
1901		Forber, Edward Rodolph, *Local Government Board, Whitehall, S.W.*
1898	d	Forster, John Walter, 18, *Mountfield-gardens, Tunbridge Wells.*
1893		Fortune, David, J.P., 84, *Wilson-street, Glasgow; and* 19, *Rowallan-gardens, Partick, Glasgow.*
1901		Foster, Harry Seymour, J.P., D.L., *Albert Mansions,* 122, *Victoria-street, S.W.*
1897		Fountain, H., 44, *Parliament-street, S.W.*
1899	c p	Fowler, The Right Hon. Sir Henry Hartley, G.C.S.I., M.P. (*Honorary Vice-President*), *Reform Club, Pall Mall, S.W.*
1868	c	Fowler, William, 4, *Nevill-park, Tunbridge Wells.*
1900		Fox, Arthur Wilson, C.B., *Asst. Labour Commr.,* 43, *Parliament-st., S.W.*
1893		Fox, Stephen Newcome, 12, *Cromwell-crescent, South Kensington, S.W.*
1878	c d	Foxwell, Professor H. Somerton, M.A., *St. John's College, Cambridge.*
1902		Foy, Alfred Vincent (*Citizens' Life Ass. Co.*), 24 *and* 25, *King William-street, E.C.*
1894		Francis, Joseph, 10, *Finsbury-square, E.C.*
1887		Frankland, Frederick William, F.I.A., *New York Life Office,* 346, *Broadway, New York.*
1899		Franklin, Arthur Ellis, 21, *Cornhill, E.C.*
1886	d	Fream, Professor William, B.Sc.,Lond., LL.D., F.L.S., F.G.S., *The Vinery, Downton, Salisbury.*
1887		Freeman, T. Kyffin, F.G.S., 35, *Whitehall-park, N.*
1902		Fremantle, Professor Henry Eardley Stephen, *University of South Africa, Cape Town.*

Year of Election.		
1886		Fuller, George Pargiter, *Neston-park, Corsham, Wilts.*
1878		Fuller, William Palmer, 2, *Verulam-buildings, Gray's Inn, W.C.*
1902		Gait, Edward Albert, I.C.S., *Rutland House, Darjeeling, India.*
1852		Galsworthy, Sir Edwin Henry, J.P., 26, *Sussex-place, Regent's-park, N.W.*
1860	*c d p*	Galton, Francis, F.R.S., D.C.L., D.Sc., 42, *Rutland-gate, S.W.*
1887	*d*	Garcke, Emile, *Donington House, Norfolk-street, Strand, W.C.*
1899		Garnon, Edward William (*Irish Provident Ass. Co.*), 46, *Queen Victoria-street, E.C.*
1895		Garvan, John Joseph, *Citizen's Life Assurance Co., Sydney, N.S.W.*
1880		*Gates, John Benjamin, A.C.A., 47, *Warwick-street, Regent-street, W.*
1899		Gelling, Benjamin Richard, *Mutual Life Assn. of Australasia, Sydney, N.S.W.*
1896		Gerlich, Hermann Gustav, Dr. Jur., 70, *Avonmore-road, West Kensington, W.*
1885		Gibb, George S., *North-Eastern Railway Company, York.*
1871		Gibbs, George Sleight, *Marsh End, Hope, Sheffield.*
1889	*d*	Gibson, George Rutledge, 55, *Broadway, New York City, U.S.A.*
1867	*c d p*	*GIFFEN, SIR ROBERT, K.C.B., LL.D., F.R.S. (*Honorary Vice-President*), *Chanctonbury, Hayward's Heath.*
1877		Gilbert, William H. Sainsbury, 70, *Queen-street, Cheapside, E.C.*
1900		Gladwell, Sydney William, 28, *Victoria-street, S.W.*
1878		*Glanville, Silvanus Goring, *Lloyd's, E.C.*
1860	*c p*	GLOVER, SIR JOHN, J.P. (*Vice-President*), 88, *Bishopsgate-street Within, E.C.*

Year of Election.		
1888		Goad, Charles E., M. Am. and Can. Soc. C.E., 53, *New Broad-st., E.C.; and Montreal, Canada.*
1901		Godfrey, Ernest Henry, 13, *Hanover-square, W.*
1897	*c d p*	Gomme, George Laurence, F.S.A., 24, *Dorset-square, Marylebone, N.W.*
1884	*d*	*Gonner, Professor Edward C. K., M.A., *University College, Liverpool.*
1901		Gooch, Henry Cubitt, 17, *Oxford-square, W.*
1885		Goodsall, David Henry, F.R.C.S., 17, *Devonshire-place, W.*
1900	*d*	Goodsir, George (*Weddel & Co.*), 16, *St. Helen's-place, E.C.*
1892		Goodwin, Alfred, M.A., 2, *Charles-road, St. Leonards, Sussex.*
1899		Gordon, Charles H. F., *Shingle Cottage, Grayshott, Haslemere.*
1868	*c p*	GOSCHEN, THE RIGHT HON. VISCOUNT, F.R.S. (*Honorary Vice-President*), *Seacoxheath, Hawkhurst, Kent.*
1855		*Gosset, John Jackson, *Thames Ditton, Surrey.*
1899	*d*	Gouge, Herbert Dillon, *Public Actuary, Adelaide, S.A.*
1885		Goulding, William Purdham, F.S.I., 41, *Moorgate-st., E.C.; and* 18, *Mercers-rd., N.*
1887		Gover, Frederic Field, 10, *Lee-park, Blackheath, S.E.*
1900		Graham, P. Anderson, 1, *Buxton-road, Chingford, Essex.*
1893		*Gray, The Hon. James McLaren, M.A., F.R.G.S., *c/o R. Todd*, 1, *York-buildings, Adelphi, W.C.*
1895	*d*	Green, John Little, *Langholm, Embleton-road, Lewisham, S.E.*
1888		Green, Joseph Shaw, 11, *Mill-street, Warrington.*
1902		Green, Walford Davis, M.A., M.P., 64, *Claverton-street, S.W.*
1895		Gretton, John, M.P., *Stapleford Park, Melton-Mowbray.*
1887		Gribble, George J., *Henlam Grange, Biggleswade.*
1868		Griffith, Edward Clifton, *Reliance Office*, 71, *King William-street, E.C.*
1878		Guthrie, Charles, F.C.A., *London Bank of Australia, Melbourne, Victoria.*
1885	*d*	Guthrie, Edwin, *Broughton Old Hall, Manchester.*

Year of Election.		
1887	*d p*	Guyot, Yves, 95, *Rue de Seine, Paris.*
1880		*Gwynne, James Eglinton A., J.P., F.S.A., *Folkington Manor, Polegate, Sussex.*
1887		Gwyther, John Howard, 13, *Lancaster-gate, W.*
1892	*d*	Hadfield, Robert A., *Fairfield, Sheffield.*
1873	*d*	*Haggard, Frederick T., 1, *Broadwater Down, Tunbridge Wells.*
1887		Haldeman, Donald Carmichael, *Mutual Life Insurance Co. of New York,* 17 *&* 18, *Cornhill, E.C.*
1883		Hall, Sir John, K.C.M.G., *Hororata, Canterbury, New Zealand.*
1897	*d*	Hall, Thomas, *Railway Commissioners' Offices, Sydney, N.S.W.*
1878		Hallett, Thomas George Palmer, M.A., *Claverton Lodge, Bath.*
1887	*d*	Hamilton, Sir Edward W., K.C.B., *The Treasury, Whitehall, S.W.*
1873	*c p*	Hamilton, The Right Hon. Lord George Francis, M.P., 17, *Montagu-street, Portman-square, W.*
1884		*Hammersley, Hugh Greenwood, 14, *Chester-square, S.W.*
1902		Hanbury, The Right Hon. Robert William, M.P., *Board of Agriculture,* 4, *Whitehall-place, S.W.*
1885		*Hancock, Charles, M.A., 2, *Cloisters, Temple, E.C.; and Reform Club, S.W.*
1875		Hankey, Ernest Alers, *Gastard House, Corsham, Wilts.*
1876		Hansard, Luke, 68, *Lombard-street, E.C.*
1871		*Harcourt, Right Hon. Sir William Vernon, K.C., M.P., F.R.S., *Reform Club, S.W.*
1886		*Hardcastle, Basil William, 12, *Gainsborough-gardens, Hampstead, N.W*

Year of Election.		
1883		Harding, G. P., *Golfers' Club*, *Whitehall-court*, *S.W.*
1900		Hardingham, Frederick Robert 88, *Albion-street*, *Leeds.*
1902		Hardy, Arthur Johnston, *Eversley*, *Monkstown*, *Co. Dublin.*
1884		Hardy, George Francis, F.I.A., *Universal Life Ass. Soc.*, 1, *King William-st.*, *E.C.*
1901	*d*	Harper, Edgar Josiah, *County Hall*, *Spring-gardens*, *S.W.*
1893		Harrap, Thomas, 143, *Stamford-street*, *Ashton-under-Lyne*, *Lancs.*
1868		Harris, David, 16, *Merchiston-avenue*, *Edinburgh.*
1899		Harris, Frank Drew, M.B. (Lond.), D.P.H., *Cowley-hill*, *St. Helens*, *Lancashire.*
1901		Harris, Frederic Ernest, *Town Hall*, *West Ham.*
1897		Harris, Walter Fred., F.I.C.A., 16, *Parliament-street*, *Hull.*
1887		Harris, William A., F.R.S.S.A., *Phœnix Chambers*, *Exchange*, *Liverpool.*
1882	*p*	Harris, William James, *Halwill Manor*, *Beaworthy*, *N. Devon.*
1902		Hart, Francis John Henning, 301, *Pitt-street*, *Sydney*, *N.S.W.*
1900		Hartley, Edwin Leach, M.A., 4, *Paper-buildings*, *Temple*, *E.C.*
1881	*c*	**HARVEY, ALFRED SPALDING**, B.A., 67, *Lombard-street*, *E.C.*
1899		Harvey, Baldwin S., 67, *Lombard-street*, *E.C.*
1896		Hawkins, Willoughby R., *Bute Docks*, *Cardiff.*
1897		Hayakawa, S., *The Treasury*, *Tokio*, *Japan.*
1895	*d*	Haynes, Thomas Henry, *Rough Down*, *Boxmoor*, *Herts.*
1898	*d p*	Hayward, Thomas Ernest, M.B. (Lond.), F.R.C.S., *Clipsley Lodge*, *Haydock*, *near St. Helens.*
1896		Heap, George, *The Charterhouse*, *Charterhouse-square*, *E.C.*
1896		*Heaton-Armstrong, William Charles, J.P., 30, *Portland-place*, *W.*
1884		Hedley, Robert Wilkin, 41, *Parliament-street*, *Westminster*, *S.W.*
1889		*Hemming, Arthur George, F.I.A. (*London Ass. Corporation*), 7, *Royal Exchange*, *E.C.*
1865		Hendriks, Augustus, F.I.A., 7, *Cornhill*, *E.C.*

Year of Election.		
1855	*c d p*	*Hendriks, Frederick, F.I.A., 7, *Vicarage-gate, Kensington, W.*
1898		Herring, George, 1, *Hamilton-place, Piccadilly, W.*
1899		Hertz, Henry Anthony, 29, *Buckingham Palace Mansions, S.W.*
1898		Hewart, Miss Beatrice, B.Sc., Lond., 43, *Parliament-street, S.W.*
1881	*d*	Hewat, Archibald, F.I.A., F.F.A., 22, *George-street, Edinburgh.*
1890	*d*	Hewins, Professor W. A. S., M.A., *London School of Economics, Clare Market, W.C.*
1886		Hibbert, H. F., 8, *Park-road, Chorley, Lancashire.*
1892	*c d p*	*Higgs, Henry, LL.B., *The Treasury, Whitehall, S.W.*
1878		*Hill, Frederick Morley, 22, *Richmond-road, Barnsbury, N.*
1900		Hillingdon, The Right Hon. Lord, 67, *Lombard-street, E.C.*
1897	*d*	Hodgson, William Gill, F.S.A.A., *Municipal Buildings, West Hartlepool.*
1889		Hogg, Quintin (Alderman), 2, *Cavendish-place, W.*
1888		Hollams, Sir John, 52, *Eaton-square, S.W.*
1895		Holland, Hon. Lionel Raleigh, B.A., 75, *Eaton-square, S.W.*
1898		Holland, Robert Martin, 68, *Lombard-street, E.C.*
1894	*d p*	Hollerith, Herman, Ph.D., &c., 1054, 31*st-street, Washington, D.C., U.S.A.*
1900		Holliday, John, M.A., F.I.A., 556, *Calle Piedad, Buenos Ayres.*
1888		Hollington, Alfred J., *Aldgate, E.*
1901		Holmes, Richard Henry, J.P. (Alderman), 10, *Royal Arcade, Newcastle-on-Tyne.*
1891	*d*	Hooker, Sir Joseph Dalton, G.C.S.I., F.R.S., &c. *The Camp, Sunningdale.*
1895	*d p*	*Hooker, Reginald Hawthorn, M.A., 3, *Gray's Inn-place, W.C.*
1896		Hooper, Angus, *Montreal, Canada.*
1879		Hooper, George Norgate, *Elmleigh, Hayne-road, Beckenham, Kent.*
1878	*c d p*	Hooper, Wynnard, 13, *Sumner-place, Onslow-square, S.W.*
1887		Hopkins, John, *Little Boundes, Southborough, Kent.*

Year of Election.		
1899		Hopkins, John Castell, 90, *Wellington-street West*, *Toronto.*
1896		*Hopkinson, Samuel Day, 26, *Austin Friars*, *E.C.*
1902		Hopwood, Sir Francis John Stephen, K.C.B., C.M.G., *Board of Trade*, *Whitehall-gardens*, *S.W.*
1894		Houldsworth, Sir William H., Bart., M.P., 35, *Grosvenor-place*, *S.W.*
1883		Howell, Francis Buller, *Ethy*, *Lostwithiel*, *Cornwall.*
1883	*d*	Howell, George, *Hampden Hse.*, *Ellingham-rd.*, *Shepherd's Bush.*
1897	*p*	Howell, Price, *Lindfield*, *near Sydney*, *N.S.W.*
1900		Howell, Walter J., C.B., *Board of Trade*, *S.W.*
1874	*c d p*	**Humphreys, Noel Algernon**, I.S.O. (*Hon. Secretary and Vice-President*), *General Register Office*, *Somerset House*, *Strand.*
1893		Humphreys-Owen, Arthur Charles, M.P., *Glansevern*, *Garthmyl*, *Montgomeryshire.*
1883		Hunt, Richard Aldington, A.I.A., *County-buildings*, *Corporation-street*, *Birmingham.*
1900		Hunt, William C., *Census Office*, *Washington*, *D.C.*, *U.S.A.*
1888		Hunter, George Burton, *Wallsend-on-Tyne.*
1902		Hutchins, Miss Bessie Leigh, 48, *Holland-street*, *Campden-hill*, *W.*
1890		Huth, Ferdinand M., 12, *Tokenhouse-yard*, *E.C.*
1888		Hyde, Clarendon G., 75, *Gloucester-terrace*, *Hyde-park*, *W.*
1887		Hyde, Henry Barry, 5, *Eaton-rise*, *Ealing*, *W.*
1901		Hyde, Hugh Vivian, 3, *St. James's-square*, *S.W.*
1893	*d*	Hyde, Hon. John, 1458, *Euclid-place*, *Washington*, *D.C.*, *U.S.A.*

Year of Election.		
1897		Ingall, Godefroi Drew, F.C.I.S., 97, *Dashwood House, New Broad-street, E.C.*
1874	*d p*	*Ingall, William Thomas Fitzherbert Mackenzie, 13, *Pinfold-road, Streatham, S.W.*
1869		*Inglis, Cornelius, M.D., *Athenæum Club, S.W.*
1899		Ingram, Eustace, 24, *Princess-road, Brownswood-park, N.*
1901		Ireland, Alleyne (*c/o Dr. Edward E. Thorpe*), 711, *Boylston-street, Boston, Mass., U.S.A.*
1887		Irvine, Somerset William D'Arcy, J.P., *Equitable Life Office of United States, Sydney.*
1864		*Ivey, George Pearse, 39, *Denmark-villas, West Brighton.*
1902	*d*	Jagger, John William, *Cape Town.*
1894	*d*	Jamieson, George, C.M.G., *The Thatched House Club, St. James's-st., S.W.*
1872	*c d p*	Janson, Frederick Halsey, F.L.S., 22, *College-hill, Cannon-street, E.C.*
1897	*d*	Jay, E. Aubrey Hastings, *Tower House, Woolwich.*
1896	*d*	Jenney, Charles Albert, 58, *William-street, New York City, U.S.A.*
1881		*Jersey, The Right Hon. the Earl of, P.C., G.C.B., *Osterley-park, Isleworth.*
1881		Johnson, Edwin Eltham, 110, *Cannon-street, E.C.*
1891	*d*	Johnson, George, 2, *Ladysmith-road, Wealdstone.*
1888		Johnson, John Grove, 23, *Cross-street, Finsbury, E.C.*
1880		Johnson, Walter, *Rounton Grange, Northallerton.*
1897		Johnston, James,
1878	*d*	Johnstone, Edward, *Queensbury, South-road, Clapham-park, S.W.*
1900		Jones, A. S. J. Warren, *Bombay, Baroda and C.I. Ry. Co., Fort, Bombay.*

Year of Election.		
1884		*Jones, Edwin, J.P., 141, *Cannon-street, E.C.*
1894	*d p*	Jones, Hugh Richard, M.A., M.D., 58*a*, *Grove-street, Liverpool.*
1877		Jones, Theodore Brooke, 70, *Gracechurch-street, E.C.*
1888	*d*	*Jordan, William Leighton, 25, *Jermyn-street, S.W.*
1889		Justican, Edwin, F.I.A., *St. Mildred's House, Poultry, E.C.*
1902		Kains-Jackson, Charles Philip Castle, 9, *Lower Mall, Hammersmith, S.W.*
1898		Karminski, Eugene, *Credit Lyonnais*, 40, *Lombard-street, E.C.*
1895		Karpeles, Benno, LL.D., xix/2 *Arm Crustergasse* 6, *Vienna.*
1873		Kay, Duncan James, *Drumpark, Dumfries, N.B.*
1885		Keen, William Brock, 3, *Church-court, Old Jewry, E.C.*
1884		Kelly, Edward Festus, 182—184, *High Holborn, W.C.*
1883	*c d*	Keltie, John Scott, F.R.G.S., LL.D., 27, *Compayne-gardens, West Hampstead.*
1884	*d*	Kemp, John, 46, *Cannon-street, E.C.*
1901		Kennaby, William James, F.C.I.S., 65, *South Lambeth-road, S.W.*
1884	*c d*	*Kennedy, Sir Charles Malcolm, K.C.M.G., C.B., 4, *Louisa-terrace, Exmouth, South Devon.*
1878		Kennedy, J. Murray, *New University Club, St. James's-street, S.W.*
1901		*Kennedy, Pitt, 39, *Palace-gardens-terrace, W.*
1881	*c*	*Kennett-Barrington, Sir V. Hunter, M.A., LL.M., 57, *Albert Hall Mansions, S.W.*
1898		Kent, Arthur C., 47, *Buckingham Palace-road, S.W.*
1899		Kershaw, John Baker C., F.I.C. (*Waterloo, Liverpool*), *Faraday House, Charing Cross-road, W.C.*
1883		*Keynes, John Neville, M.A., D.Sc., 6, *Harvey-road, Cambridge.*

Year of Election.		
1884		Kimber, Henry, M.P., 79, *Lombard-street, E.C.*
1898	d	*King, Arthur William Waterlow. *Orchard House, Gt. Smith-st., Westminster, S.W.*
1883		*King, Bolton, B.A., *Gaydon, Warwick.*
1900		Kinnear, Walter Samuel, B.A., *Royal Exchange Ass. Co.*, 5, *College-grn., Dublin.*
1894		*Kirkcaldy, William Melville, *Dunedin, Otago, New Zealand.*
1888		*Kitson, Sir James, Bart., M.P., J.P., *Gledhow Hall, Leeds.*
1889		Kloetgen, W. J. H., 34, *Gutter-lane, Cheapside, E.C.*
1899	d	Knights, John Martin, *Chrisdene, Wanstead Pk.-av., Wanstead Park, E.*
1878		*Kusaka, Yoshio, *First National Bank, Tokio, Japan.*
1902		Lahitte, Emilio (*Chief Statistician*), *Ministry of Agriculture, Buenos Aires.*
1900		Lake, Cuthbert Joseph, F.S.I., 25, *Bucklersbury, E.C.; and Heage House, Crouch-hill, N.*
1901		Lakin-Smith, Herbert, 26, *Waterloo-street, Birmingham.*
1897		Lamperd, Frederick,
1902		Lark, Albert Ernest, F.C.A., 2, *South Quay, Great Yarmouth.*
1885	d	Latham, Baldwin, M.Inst. C.E., *Parliament-mansions, Victoria-street, S.W.*
1892		Latham, Stanley A., A.C.A., 2, *Hare-court, Temple, E.C.*
1897	d	*Lawrence, Frederick William, M.A., *Mansfield House, Canning Town, E*
1890		Lawson, William Ramage, *Finchley Lodge, North Finchley.*
1883	d	*Leadam, Isaac Saunders, M.A., 1, *The Cloisters, Temple, E.C.; and Reform Club, S.W.*
1902		Leah, Samuel Dawson, 18, *Applegarth-road, Brook Green, W.*

Year of Election.		
1886		Leathes, Stanley M., *Trinity College, Cambridge.*
1899	*d*	Lee, Arthur, 10, *Berkeley-square, Clifton, Bristol.*
1879		*Leete, Joseph, 36, *St. Mary-at-hill, E.C.; and Eversden, S. Norwood-park.*
1899		L'Estrange, Charles James (*Blackie and Son, Ltd.*), 17, *Stanhope-street, Glasgow.*
1887		Leitch, Alexander (*Scottish Provident Institution*), 17, *King William-street, E.C.*
1892		Leon, Herbert Samuel, *Bletchley-park, Bletchley, Bucks.*
1888		*Le Poer-Trench, Col. The Hon. W., R.E., J.P., 3, *Hyde Park-gardens, W.*
1887		*Le-Roy-Lewis, Lieut.-Colonel Herman, B.A., *Westbury House, Petersfield, Hants.*
1898		Leveaux, Arthur Michael, A.I.A., 28, *Abingdon-street, Westminster, S.W.*
1862		Lewis, Robert, 1, *Bartholomew-lane, E.C.*
1888		*Liberty, A. Lasenby, *The Manor House, The Lee, near Gt. Missenden.*
1884		*Lines, William Edward, 2, *Essex-court, Temple, E.C.*
1902		Litchfield, Frederick, 38, *Whitehall Park, Hornsey-lane, N.*
1898		Litkie. Valerian A., 39, *South-street, W.*
1892		Llewelyn, Sir John T. D., Bart., *Penllergare, Swansea.*
1879		Lloyd, Wilson, J.P., F.R.G.S., *Park Lane House, Wood-green, Wednesbury.*
1888	*c d p*	LOCH, CHARLES S., B.A., *Drylaw Hatch, Oxshott, Leatherhead.*
1900		Logan, James Patterson,
1882	*c d p*	*Longstaff, George Blundell, M.A., M.D., F.R.C.P., *Highlands, Putney Heath, S.W.*
1876		*Lornie, John Guthrie, J.P. (*of Birnam & Pitcastle*), *Rosemount, Kirkcaldy, N.B.*
1892	*d*	Lough, Thomas, M.P., 49, *Ashley-gardens, Westminster, S.W.*
1886		*Low, Malcolm, 22, *Roland-gardens, S.W.*
1895		Lowe, Thomas Enoch, F.S.A.A., 89, *Darlington-street, Wolverhampton.*
1901		Lumb, Charles F., *Real Estate Trust Buildings, Philadelphia, U.S.A.*

Year of Election.		
1875		*Mabson, Richard Rous, *The Statist*, 51, *Cannon-street*, *E.C.*
1873		*Macandrew, William, J.P., *Westwood House*, *near Colchester.*
1894		Macaulay, Thomas Bassett, *Sun Life Assurance Co.*, *Montreal*, *Canada.*
1884		McCabe, William, LL.B., F.I.A. (*North American Life Ass. Co.*), 112 *to* 118, *King-street West*, *Toronto*, *Canada.*
1888		McCankie, James, 63, *George-street*, *Edinburgh.*
1867		M'Clean, Frank, *Rusthall House*, *Tunbridge Wells.*
1892		McCleery, James Carlisle, 7, *Upper Fountain-street*, *Leeds.*
1902		Macdonald, John Hutcheson, 4, *Lothbury*, *E.C.*
1897		MacDonald, Mrs. Margaret Ethel, 3, *Lincoln's Inn Fields*, *W.C.*
1898		*Macdonald, Robert Alexander, *Royal Bank of Scotland*, *Edinburgh.*
1872	*c d p*	MACDONELL, JOHN, C.B., LL.D., *Room* 183, *The Royal Courts of Justice*, *W.C.*
1873		*McEwen, Laurence T., *c/o. R. A. McLean*, 1, *Queen Victoria-st.*, *E.C.*
1899	*d*	McHardy, Coghlan McLean, J.P., 1, *Grenville-place*, *Cromwell-road*, *S.W.*
1902		Machin, Stanley C., *Hackney Wick Works*, *Hackney Wick*, *N.E.*
1900		Mackay, Thomas, 14, *Wetherby-place*, *S.W.*
1886		*Mackenzie, Colin, F.R.G.S., *Junior Athenæum Club*, 116, *Piccadilly.*
1878		McKewan, William, *Elmfield*, *Bickley*, *Kent.*
1876		*McLean, Robert Allan, F.R.G.S., 1, *Queen Victoria-street*, *E.C.*
1900		Macleod, Reginald, C.B., *Scottish Office*, *Whitehall*, *S.W.*
1888	*d*	McNiel, Henry, 10, *Walbrook*, *E.C.*

Year of Election.		
1882		MacRosty, Alexander, *West Bank, Esher.*
1899		*MacWharrie, Niel Matheson, *Conservative Club, St. James's, S.W.*
1891		Maidment, Thomas, *Insurance Chambers, King's-road, Southsea.*
1887		Malleson, Frank R., *Dixton Manor House, Winchcombe, Cheltenham.*
1902		Mandello, Julius George, *Pressbourg, Hungary.*
1902		Mansfield, The Right Hon. the Earl of, *Scone Palace, Perth, N.B.*
1884		*Manson, Frederick William,
1888		Manuel, James, 36, *Vittoria-street, Ottawa, Canada.*
1877		*Maple, Sir John Blundell, Bart., M.P., 8, *Clarence-terrace, Regent's-park, N.W.*
1880	c d p	*Marshall, Professor Alfred, M.A., *Balliol Croft, Madingley-road, Cambridge.*
1887		Marshall, W. Bayley, M.Inst.C.E., M.Inst.M.E., *Struan, Richmond Hill, Edgbaston, Birmingham.*
1887		Martin, James, 4, *King-street, Cheapside, E.C.*
1899		Martin, John Roxburgh, *The Treasury, Sydney, N.S.W.*
1872	c d p	*MARTIN, RICHARD BIDDULPH, M.A., M.P. (*Treasurer*), 10, *Hill-street, Berkeley-square, W.*
1884		Mason, William Arthur, 31*a*, *Colmore-row, Birmingham.*
1898		Massingberd, Stephen, B.A., *Gunby Hall, Burgh, Lincolnshire.*
1875		*Mathers, John Shackleton,
1901		Meakin, George Healey, A.S.A.A., *Town Hall, Islington, N.*
1882		Medhurst, John Thomas, F.S.A.A., *City of London College, White-street, Moorfields, E.C.*
1853		*Meikle, James, F.I.A., *Wardieburn House, Ferry-road, Edinburgh.*
1899		Mendl, Sigismund Ferdinand, 14, *Devonshire-street, Portland-place, W.*
1901		Meredith, Hugh Owen, 39, *Fellows-road, Hampstead, N.W.*
1884	d	Merton, Zachary, 6, *Green-street, Park-lane, W.*
1899		Miller, James William, M.A.,

Year of Election.		
1900		Miller, John W., *Scottish Widows' Fund*, 28, *Cornhill*, *E.C.*
1889		*Mills, Major Henry Farnsby,
1892	*c d*	Milner, His Excellency Viscount, G.C.B., G.C.M.G., *Government House*, *Johannesburg.*
1882	*p*	Milnes, Alfred, M.A., 44, *Goldhurst-terrace*, *S. Hampstead*, *N.W.*
1874		*Mocatta, Frederick D., F.R.G.S., 9, *Connaught-place*, *W.*
1878		Moffat, Robert J., *The Lodge*, *Waterbeach*, *Cambridgeshire.*
1902		Molesworth, Sir Guilford Lindsey, K.C.I.E., *The Manor House*, *Bexley*, *Kent.*
1888	*d*	*Molloy, William R. J., M.R.I.A. (*National Education Board*), 78, *Kenilworth-square*, *Rathgar*, *Dublin.*
1899		*Moon, Edward Robert Pacy, M.P., 6, *Onslow Gardens*, *W.*
1887		Moore, Arthur Chisholm, 23, *Essex-street*, *Strand*, *W.C.*
1874		Moore, Charles Rendall, 43, *Breakspears-road*, *St. Johns*, *S.E.*
1878		*Moore, John Byers Gunning, *Loymount*, *Cookstown*, *Ireland.*
1902		Morgan, George Frederick Hughes, 49, *Chancery-lane*, *E.C.*
1893	*d*	Morgan, Percy Charlton, 5, *Victoria-street*, *S.W.*
1902	*p*	Morison, Theodore, M.A., *Principal M. A.-O. Coll.*, *Aligarh*, *U.P.*, *India.*
1888		Morris, John (17, *Throgmorton-avenue*, *E.C.*), 34, *Hyde Park-square*, *W.*
1891	*c d p*	Morrison, Rev. William Douglas, LL.D., 2, *Embankment-gardens*, *Chelsea*, *S.W.*
1885		*Mosley, Tonman, *Bangors*, *Iver*, *Uxbridge.*
1886	*c*	Mowbray, Sir Robert Gray Cornish, Bart., M.P., 10, *Little Stanhope-street*, *S.W.*
1886	*d*	Moxon, Thomas B., *Lancs. and Yorks. Bank*, *King-st.*, *Manchester.*
1883		Muirhead, Henry James, *Fairfield*, *Hythe*, *Kent*; *and Reform Club*, *S.W.*
1899	*d*	Muirhead, James Muirhead Potter, *P.O. Box* 573, 44, *St. George's street*, *Cape Town*
1899		Mukerji, Benoy Vehari, B.A., B.Litt., *St. Andrew's College*, *Gorakhpur*, *N.W.P.*, *India.*
1897	*d*	Mullins, George Lane, M.A., M.D., *Murong*, *Albion-street*, *Waverley*, *Sydney*, *N.S.W.*

Year of Election.		
1891	*d*	Murphy, Shirley Foster, M.R.C.S., 9, *Bentinck-terrace*, *Regent's-park*, *N.W.*
1878	*d*	Murray, Adam, *Hazeldean*, *Kersal*, *Manchester.*
1892		Naoroji, Dadabhai, *Washington House*, 72, *Anerley-park*, *S.E.*
1878		*Nathan, Henry,
1869	*c d p*	NEISON, FRANCIS GUSTAVUS PAULUS, F.I.A., 93, *Adelaide-road*, *South Hampstead.*
1877		Nevill, Charles Henry, 1 *and* 2, *Great Winchester-street*, *E.C.*
1900		Newcomb, Harry T., LL.M., 137, *South Fifth-street*, *Philadelphia.*
1894		Newey, William Lewis, F.S.A.A., 39, *Temple-row*, *Birmingham.*
1889	*d p*	Newsholme, Arthur, M.D., 11, *Gloucester-place*, *Brighton.*
1895	*c*	*Nicholson, Charles Norris, 35, *Harrington-gardens*, *South Kensington*, *S.W.*
1878	*d p*	Nicholson, Professor J. Shield, M.A., D.Sc., *University of Edinburgh.*
1858	*d*	Nightingale, Miss Florence, 10, *South-street*, *Park-lane*, *W.*
1871		*Noble, Benjamin, F.R.A.S., *Westmorland House*, *Low Fell*, *Gateshead.*
1902		Norman, Frederick Charles (*Irish Provident Ass. Co.*), *Cranleigh*, *Egham-hill*, *Egham*, *Surrey.*
1877	*d*	Norman, Field-Marshal Sir Henry Wylie, G.C.B., G.C.M.G. 85, *Onslow-gardens*, *S.W.*
1889		Northampton, The Most Hon. the Marquess of, 51, *Lennox-gardens*, *S.W.*
1878		Northbrook, The Right Hon. the Earl of, G.C.S.I., D.C.L. (*Stratton*, *Micheldever Station*), 42, *Portman-square*, *W.*

Year of Election.		
1888		Oakley, Sir Henry, 37, *Chester-terrace, Regent's-park, N.W.*
1899		O'Connor, John Edward, M.B., B.Ch., *White Lodge, Kirby Muxloe, Leicester.*
1898		O'Connor, Percival C. Scott, *Chapra, Bengal, India.*
1893		O'Connor, Vincent C. Scott, *Authors' Club*, 3, *Whitehall-court; and c/o W. Watson & Co.*, 7, *Waterloo-place, S.W.*
1880		*Oelsner, Isidor, 31, *Holland Villas-road, Kensington, W.*
1901		Offen, Charles Rose Witcher. *Cumberland-road, Bristol.*
1885	*c d p*	Ogle, William, M.A., M.D., F.R.C.P., &c., 10, *Gordon-street, Gordon-square, W.C.*
1885	*d*	*Oldham, John, *River Plate Telegraph Company, Montevideo.*
1896		Olney, George Washington, LL.B., 58, *William-street, New York City, U.S.A.*
1892	*c*	Onslow, The Right Hon. the Earl of, G.C.M.G., *Clandon-park, Guildford, Surrey.*
1878		Oppenheim, Henry, 16, *Bruton-street, Bond-street, W.*
1877		Ormond, Richard, 24, *Grainger-street West, Newcastle-on-Tyne.*
1899		Ormsby, John Yeaden (*Ontario Mutual Life Ass. Co.*), *Woodstock, Ontario.*
1894	*d*	Owen, Edgar Theodore, *Registrar of Friendly Societies, Perth, W.A.*
1887	*d*	Owen, Evan Frederick, A.I.A., *Actuary for Friendly Societies, Melbourne.*

Year of Election.		
1887	*d*	*Page, Edward D. (*Faulkner, Page, & Co.*), *Box* 843, 60, *Worth-street, New York City.*
1886		Pain, James, *Lowlands, Wallington, Fareham.*
1899	*d*	Paish, George, *The Statist*, 51, *Cannon-street, E.C.*
1866	*c d p*	*Palgrave, Robert Harry Inglis, F.R.S., *Belton, Great Yarmouth, Norfolk.*
1888		Pannell, William Henry, F.C.A., *Library Chambers, Basinghall-street, E.C.*
1901		Parisot, Oscar La Valette, 71, *Fleet-street, E.C.*,
1878		Park, David Francis, C.A., F.F.A., A.I.A., 39, *Lombard-street, E.C.*
1887		Parker, Archibald, *Camden Wood, Chislehurst, Kent.*
1878		Parry, Thomas, *Grafton House, Ashton-under-Lyne.*
1883		Paterson, John, 1, *Walbrook, E.C.*
1888		Pattullo, James Durie, 71, *King William-street, E.C.*
1877		Paul, Henry Moncreiff, 12, *Lansdowne-crescent, Notting-hill, W.*
1878	*d*	Paulin, David, 6, *Forres-street, Edinburgh.*
1893	*d*	Payne, Alexander William, F.C.A., 70, *Finsbury-pavement, E.C.*
1884		*Peace, Sir Walter, K.C.M.G., 26, *Victoria-street, Westminster, S.W.*
1880		*Pease, Sir Joseph Whitwell, Bart., M.P., *Hutton Hall, Guisborough, Yorks.*
1902		Pelham, Hon. Thomas Henry William, *Fisheries and Harbour Dept., Bd. of Trade, S.W.*
1895		Peixotto, M. Percy (*U.S. Equitable Life Office*), 36bis, *Avenue de l'Opéra, Paris.*
1891	*d*	Penn-Lewis, William, *The Woodlands, Great Glen, viâ Newton Harcourt, Leicester.*
1894	*d*	Perris, George Herbert (*Literary Agency of London*), 5, *Henrietta-street, W.C.*
1902		Peters, Edward T. (*U.S. Dept. of Agriculture*), 81, *Constantine-road, Hampstead, N.W.*
1890		Peters, John Wyatt, 5, *King's-road, Southsea.*
1883		Petheram, Frederick William, F.C.A., *Moorfield-chmbrs.*, 95, *Finsbury-pavement, E.C.*
1886		Peto, Sir Henry, Bart., M.A., *Chedington Court, Misterton, Crewkerne, Somersetshire.*

Year of Election.		
1887		Phelps, Lieut.-General Arthur, 23, *Augustus-road*, *Edgbaston*, *Birmingham.*
1886	*d*	*Phelps, The Rev. Lancelot Ridley, M.A., *Oriel College*, *Oxford.*
1895		Phillips, Robert Edward (A.M.Inst.C.E.), 70, *Chancery-lane*, *E.C.*
1871	*d*	*Pickering, John, F.R.G.S., F.S.A., 86, *Thicket-road*, *Anerley*, *S.E.*
1898		Pietersen, James Frederick Gerhard, L.R.C.P., M.R.C.S., *Ashwood House*, *Kingswinford*, *Dudley.*
1900		Pigou, Arthur Cecil, B.A., *King's College*, *Cambridge.*
1878	*d*	*Pim, Joseph Todhunter, *Rinnamara*, *Monkstown*, *Co. Dublin.*
1886		Pink, J. Francis, 62, *Chandos-street*, *Strand*, *W.C.*
1890	*c d*	PITTAR, THOMAS JOHN, C.B., *H.M. Custom House*, *E.C.*
1881		Planck, Charles, M.R.C.S. (*Deputy Surgeon-General*), *Lyden Croft*, *Edenbridge*, *Kent.*
1902		Plant, Alfred Thomas, *Public Offices*, *East Ham.*
1883	*d*	Platt, James, 19, *Roslyn Hill*, *Hampstead*, *N.W.*
1895		Platt-Higgins, Frederick, M.P., *Homeleigh*, *Bowdon*, *Cheshire.*
1901		Plender, William, 4, *Lothbury*, *E.C.*
1861	*c d*	Plowden, Sir William Chicele, K.C.S.I., 5, *Park-crescent*, *Portland-place*, *W.*; *and* *Aston Rowant House*, *Tetsworth*, *Oxon.*
1896		*Pontifex, Bryan, A.C.A., *E. I. Railway Co.*, 105, *Clive-street*, *Calcutta.*
1891		Pope, Henry Richard, *Iddesleigh Mansions*, *Westminster*, *S.W.*
1891		Potter, Henry, 222, *Queen's-road*, *New Cross Gate*, *S.E.*
1879	*c d*	*POWELL, SIR FRANCIS SHARP, BART., M.P., (*Vice-President*), (*Horton Old Hall*, *Bradford*), 1, *Cambridge-square*, *Hyde-park*, *W.*
1871		Power, Edward, 16, *Southwell-gardens*, *South Kensington*, *S.W.*
1877		*Prance, Reginald Heber, *Frognal*, *Hampstead*, *N.W.*
1877	*d*	Praschkauer, Maximilian, *St. Alban's-mansions*, *Kensington-court*, *S.W.*
1867		*Pratt, Robert Lindsay, 80, *Bondgate*, *Darlington.*

Year of Election.		
1896		Pretyman, Captain Ernest George, M.P., *Orwell-park, Ipswich.*
1887	*c d p*	*Price, L. L., M.A., *Oriel College, Oxford.*
1877	*c d p*	PRICE-WILLIAMS, RICHARD, M.Inst.C.E., 18, *Chandos-road, Willesden Green.*
1897	*d*	Primrose, Sir Henry William, K.C.B., C.S.I., *Inland Revenue Office, Somerset House, W.C.*
1887	*c d p*	Probyn, Leslie Charles, 79, *Onslow-square, S.W.*
1889		Probyn, Lieut.-Colonel Clifford, 55, *Grosvenor-street, Grosvenor-square, W.*
1886		Provand, Andrew Dryburgh, 2, *Whitehall-court, S.W.*
1896		Pryor, Edward Thomas, 23, *Fore-street, E.C.*
1902		Puckle, Raymond Aufiere, 19, *de Crespigny-park, London, S.E.*
1871	*c*	Puleston, Sir John Henry, 2, *Bank-buildings, Princes-street, E.C.*

1901		Quin, Stewart Blacker, F.C.A., 1, *Lombard-street, Belfast.*

1883		Rabbidge, Richard, F.C.A., 32, *Poultry, E.C.*
1872	*d p*	*Rabino, Joseph, *Chief Manager, Imperial Bank of Persia, Teheran.*
1888		*Radcliffe, Sir David, J.P., *Rosebank, Knowsley, Prescot.*
1858		*Radstock, The Right Hon. Lord, *Mayfield, Woolston, Southampton.*

Year of Election.		
1885	*c d*	Rae, John, M.A., 1, *Rockland-road*, *Putney*, *S.W.*
1900	*d p*	Raffalovich, Alexis, *Gr. Morskaia*, 53/8, *St. Petersburg.*
1887	*d p*	Raffalovich, His Excellency Arthur, 19, *Avenue Hoche*, *Paris.*
1860		Ramsay, Alexander Gillespie, F.I.A., *Canada Life Ass. Co.*, *Hamilton*, *Canada*, *West*
1885		Randell, James S., 19, *Alfred-street*, *Bath.*
1880	*c*	Rankin, Sir James, Bart., M.P., 35, *Ennismore-gardens*, *Prince's-gate*, *S.W.*
1897		Ranson, Albert, 32, *Westgate-street*, *Ipswich.*
1874	*c d p*	*Ravenstein, Ernest George, F.R.G.S., 2, *York-mansions*, *Battersea-park*, *S.W.*
1877		*Rawlins, Thomas, 45, *King William-street*, *E.C.*
1895		Rawlinson, Albert, 3/5, *Garstin's-place*, *Calcutta.*
1893		Rea, Charles Herbert Edmund, 223, *Norwood-road*, *Herne-hill*, *S.E.*
1889		*Reed, Thomas, F.C.A., 63, *King-street*, *South Shields.*
1898		Renwick, William George, 11, *Pembroke-terrace*, *Penge*, *S.E.*
1888	*c d p*	**REW, ROBERT HENRY** (*Hon. Secretary*), *Board of Agriculture*, 3, *St. James's-square*, *S.W*
1886		Rhens, Robert, 102, *Greenwood-road*, *Hackney*, *N.E.*
1888		Rhodes, George Webber, 131, *Wool Exchange*, *E.C.*
1899		Rhodes, Thomas, 14, *Cockspur-street*, *S.W.*
1895		Richards, Roger C. (*Inner Temple*), *Crayford House*, *Honor Oak-road*, *S.E.*
1896		Richards, Samuel Norman, 11, *Southcot-place*, *Bath.*
1899		Richardson, George Henry, F.C.I.S., 2, *Falkner-street*, *Manchester.*
1895		Richardson, Sir Thomas, *Kirklevington Grange*, *Yarm*, *Yorks.*
1873		Ripon, The Most Hon. the Marquess of, K.G., F.R.S., 9, *Chelsea Embankment*, *S.W.*
1892		Rivington, Francis Hansard, 44, *Connaught-square*, *W.*
1882		Roberts, Edward, F.R.A.S. (*Nautical Almanac Office*), 3, *Verulam-buildings*, *Gray's Inn*, *W.C.*

Year of Election.		
1894	*d p*	Robertson, James Barr, *Oriental Club, Hanover-square, W.*
1900		Robinson, James, *Clarendon House, Clayton-st. W., Newcastle-on Tyne.*
1901		Rogers, John Innes, 119, *Cannon-street, E.C.*
1880		*Ronald, Byron L., 14, *Upper Phillimore-gardens, W.*
1873	*c*	*Rosebery, The Rt. Hon. the Earl of, K.G., K.T., F.R.S., 38, *Berkeley-square, W.*
1892	*d*	Ross, Charles Edmonstone, F.S.A.A., *Public Works Department, Chepaux, Madras.*
1900		Ross, John Howlett (*Australian Financial Gazette*), *Queen-street, Melbourne, Victoria.*
1897		Rothwell, William Thomas, J.P., *Newton Heath, near Manchester.*
1899	*d*	Rowntree, Benjamin Seebohm, 32, *St. Mary's, York.*
1898	*d p*	Rozenraad, Cornelius, 4, *Moreton-gardens, Kensington, W.*
1890		Ruffer, Marc Armand, M.A., M.D., B.Sc., *Ramleh, Egypt.*
1888	*d*	Rusher, Edward Arthur, F.I.A., 142, *Holborn Bars, E.C.*
1886		Russell, Arthur B., F.C.A. (11, *Ludgate-hill, E.C.*), 17, *Rosslyn-hill, Hampstead, N.W.*
1878	*d*	Russell, Richard F., 8, *John-street, Adelphi, W.C.*
1873		Rutherford-Elliot, J. G., *Elphinstone, Tyndall's Park-road, Clifton, Bristol.*
1902		Ruttkay, W. de, LL.D., *St. Ermin's Hotel, Westminster, S.W.*
1894	*d*	Sachs, Edwin Otho, 3, *Waterloo-place, Pall Mall, S.W.*
1873		*Salisbury, The Most Hon. the Marquess of, K.G., P.C., F.R.S., 20, *Arlington-street, W.*
1898	*d*	Salmon, Richard George, F.I.A., *Sun Life Ass. Soc., Threadneedle-st., E.C.*

Year of Election.		
1875	d	*Salomons, Sir David Lionel, Bart., J.P., *Broom-hill, Tunbridge Wells.*
1876		Salt, Sir Thomas, Bart., *Weeping Cross, Stafford.*
1892		Samuel, Charles, 176, *Sutherland-avenue, Harrow-road, W.*
1868	c	Samuelson, The Rt. Hon. Sir Bernhard, Bart., F.R.S., 56, *Prince's-gate, Hyde-park, S.W.*
1899	d	Sanderson, Frank, M.A., *Canada Life Ass. Co., Toronto, Canada.*
1895		Sanger, Charles Percy, B.A., 453, *Strand, W.C.*
1891		*Sarda, Pandit Har Bilas, B.A., M.R.A.S., *Government College, Ajmere, India.*
1886	d p	Sauerbeck, Augustus (*Helmuth Schwartz & Co.*), 3 & 4, *Moorgate-street-buildings, E.C.*
1893		Saunders, Cecil Roy, F.I. Inst., *Eling House, Eling, Hants.*
1887		*Scarth, Leveson, M.A., 12, *York-buildings, Adelphi, W.C.*
1877		Schiff, Charles, 22, *Lowndes-square, S.W.*
1902		Schindler, Walter, 144, *Mitcham-lane, Streatham, S.W.*
1891	d p	*Schloss, David F., M.A., *Hill House, Wimbledon.*
1895		Schmidt, Hermann (*Deutsche Bank*), *Lombard House, George-yard, Lombard-st., E.C.*
1891		Schooling, John Holt, *Fotheringhay Hse., Montpelier-row, Twickenham.*
1895		Schuurman, Willem H. A. Elink, 71, *Bosboon-Toussaintstraat, Amsterdam.*
1883.		*Schwann, John Frederick, *Oakfield, Wimbledon; and* 6, *Moorgate-st., E.C.*
1900	d	Scott, Richard Clarkson, 21, *Water-street, Liverpool.*
1888		Scotter, Sir Charles, *Surbiton.*
1887	c d	Seaton, Edward, M.D. (Lond.), F.R.C.P., *The Limes, Clapham-common, S.W.*
1880		*Seeley, Sir Charles, Bart., *Sherwood Lodge, Nottingham.*
1899		Setchfield, George Beeby (*Refuge Ass. Co.*), *Beulah Kop,* 3, *Clarkson-street, Sheffield.*
1886	d p	Seyd, Ernest J. F., 38, *Lombard-street, E.C.*
1873	d	Seyd, Richard, 38, *Lombard-street, E.C.*
1898		Shaw, William Napier, M.A., F.R.S., D.Sc., 10, *Moreton-gardens, South Kensington, W.*

Year of Election.		
1877	c d p	**Shaw-Lefevre, The Right Hon. George, M.A.** (*Honorary Vice-President*), 18, *Bryanston-square, W.*
1896	p	Sheppard, William Fleetwood, M.A., LL.M., *Board of Education, Whitehall, S.W.*
1898	d	Sherwell, Arthur, 38, *St. Mary's, York.*
1885		Sherwin, Joseph Henry, 7, *Whitehall-place, S.W.*
1888		Shillcock, Joshua, M.A., *Bank of England, West Branch, Burlington-gardens, W.*
1886		Silver, Stephen William, 3, *York-gate, Regent's-park, N.W.*
1892		*Sinclair, Captain John, M.P., 101, *Mount-street, Berkeley-square, W.*
1902		Sinclair, H. D., 19 *and* 20, *Silver-street, Wood-street, E.C.*
1881	d	Skrine, Francis Henry B., *c/o H. S. King and Co.*, 45, *Pall Mall, S.W.*
1888		Slade, Alfred Thomas, *Wardrobe Chambers, Queen Victoria-street, E.C.*
1888		Slade, Francis William, 17, *Victoria-street, Westminster, S.W.*
1883		Sly, Richard Stevens, J.P., F.R.G.S., *Killiney, Hatherley-road, Sidcup, Kent.*
1878		*Smith, Charles, M.R.I.A., F.G.S., Assoc. Inst. C.E., *c/o Sir Henry Gilbert, Harpenden, St. Albans.*
1896		Smith, Edward, 75, *Gore-road, South Hackney, N.E.*
1871	d	Smith, E. Cozens, 1, *Old Broad-street, E.C.*
1878	d	*Smith, George, LL.D., C.I.E., 10, *South Learmouth-gardens, Edinburgh.*
1889	c d	Smith, George Armitage, M.A., 3, *Albert-terrace, Regent's-park, N.W.*
1888	c d	**Smith, Hubert Llewellyn, M.A., B Sc.,** 49, *St. George's-square, S.W.*
1877		Smith, Howard S., A.I.A., F.F.A., *Bank Chambers*, 14, *Waterloo-street, Birmingham.*
1891		Smith, James Parker, M.P., *Jordanhill, Partick, N.B.*
1901		Smith, Robert John, C.A., 59, *St. Vincent-street, Glasgow.*
1888		Smith, Walter J., *St. Bartholomew's Chmbs.*, 61, *W. Smithfield, E.C.*
1890		Smith, William Alexander, J.P., *Arpafeelie, Moorebank, N.S.W.*
1894		*Smith, The Hon. William Frederick Danvers, M.P., 3, *Grosvenor-place, S.W.*

Year of Election.		
1894		Smithers, Frederick Oldershaw, 171, *Adelaide-road, Hampstead, N.W.*
1900		*Somerville, William, D.Sc., M.A., 4, *Whitehall-place, S.W.*
1899		Sorley, James, F.I.A., F.F.A., F.R.S.E., 32, *Onslow-square, S.W.*
1897		Southgate, Henry William, *Tannery House, Headingley, Leeds.*
1895		Soward, Alfred Walter, 28, *Therapia-road, Honor Oak, S.E.*
1855	*d*	Sowray, John Russell, *Ivy Cottage, Sissinghurst, Kent.*
1896		Sparrow, Frederick Syer, *c/o J. Wonfor*, 22, *Yonge-pk., Seven Sisters-rd.*
1889		Speirs, Edwin Robert (*General Life Ass. Co.*), 1, *Waterloo-place, S.W.*
1867		*Spencer, Robert James,
1892		Spender, John Alfred, M.A., 29, *Cheyne-walk, S.W.*
1897	*d*	Spensley, J. Calvert, 3, *Provost-road, S. Hampstead, N.W.*
1883		Spicer, Albert, 50, *Upper Thames-street, E.C.*
1898		Spicer, Edward Samuel, 73, *Philbeach-gardens, S.W.*
1856	*d*	*Sprague, Thomas Bond, M.A., LL.D., F.I.A., 29, *Buckingham-terrace, Edinburgh.*
1882		Stack, Thomas Neville (9, *Crosby-square, E.C.*), 70, *Gloucester-crescent, Regent's-park, N.W.*
1901		Stallard, Charles Frampton, *Office of Public Prosecutor, Krugersdorp, S.A.*
1889	*d*	Stanton, Arthur G., 13, *Rood-lane, E.C.*
1902		Steel-Maitland, Arthur Herbert Drummond Ramsay, 72, *Cadogan-square, S.W.*
1899		Stenberg, Ernst Gottfried, *Registrar-General's Office, Perth, W.A.*
1882		*Stern, Edward D., 4, *Carlton House-terrace, S.W.*
1885	*d*	Steveus, Marshall, 18, *Exchange-street, Manchester.*
1902	*d*	Stone, George F., *Secretary, Board of Trade, Chicago.*
1902		Stott, Walter Grason, 6, *Carlton-terrace, Milton-road, Liverpool.*
1889		Stow, Harry Vane, 24, *Bedford-street, Covent-garden, W.C.*
1872	*d*	Strachey, General Sir Richard, R.E., G.C.S.I., F.R.S., 69, *Lancaster-gate, W.*

Year of Election.		
1883	*d*	*Strathcona and Mount Royal, The Right Hon. Lord, G.C.M.G. (*High Commissioner for Canada*), 17, *Victoria-street, S. W.*
1880		Strutt, Hon. Frederick, *Milford House, near Derby.*
1891		Stuart, Harold A., *Inspector-General of Police, Madras, India.*
1884		*Sugden, Richard, *The Farre Close, Brighouse, Yorkshire.*
1895		Sutherland, J. Francis, M.D., 19, *Mayfield-road, Edinburgh*
1902		Sutton, Martin John, J.P., *Henley-park, Henley-on-Thames.*
1899		Suzuki, Junichiro, 15, *Kitacho, Ushigome, Tokio.*
1900		Swetenham, Charles C., *c/o Grindlay Groom & Co., Bombay, India*
1881		Sykes, George Samuel, 1, *Grant's-lane, Calcutta, India.*
1900	*d p*	Sykes, John Frederick Joseph, M.D., D.Sc., 40, *Camden-square, N.W.*
1894	*d*	Tagliaferro, Napoleone, F.R.H.S., *Education Office, Malta.*
1889	*d*	Tattersall, William, *Melbrook, Bowdon, Cheshire.*
1901		Taylor, Lachlan, *National Liberal Club, S.W.*
1889		Tayler, Stephen Seaward (Alderman), *Fairholme, Mt. Ephraim-rd., Streatham, S.W.*
1887	*d*	Taylor, R. Whately Cooke, 39, *Victoria-street, S.W.*
1888		*Taylor, Theodore Cooke, M.P., J.P., *Sunny Bank, Batley, Yorkshire.*
1898		Teasdale, William Alfred (*Scholfields, Ltd.*), *Strutt-street, Manchester.*
1893		Teece, Richard, F.I.A., F.F.A., 87, *Pitt-street, Sydney, N.S.W.*
1884		Tempany, Thomas William, F.R.H.S., 25, *Bedford-row, W.C.*

Year of Election.		
1888	*d*	Temperley, William Angus, junr., 2, *St. Nicholas-buildings, Newcastle-on-Tyne.*
1888		Theobald, John Wilson, 3*a, Coleman-street, E.C.*
1889		Thodey, William Henry, 479, *Collins-street, Melbourne, Victoria.*
1888	*d*	Thomas, David Alfred, M.P., *Llanwern, near Newport, Mon.*
1899		Thomas, Henry, *Queen's-chambers, Neath, South Wales.*
1887		Thomas, John Collette, *Trewince, Portscatho, Cornwall.*
1896	*d*	Thomas, John Tubb. L.R.C.P. & S. (Edin.), D.P.H., *Pevensey House, Trowbridge, Wilts.*
1879	*d*	Thomas, W. Cave,
1864		*Thompson, Henry Yates, 19, *Portman-square, W.*
1901		Thompson, Robert John, *Board of Agriculture,* 3, *St. James's-square, S. W.*
1895		Thomson, David Couper, J.P., *Dundee Courier Office, Dundee.*
1882		Tinker, James, *Hordlecliff, Lymington, Hants.*
1889		Touch, George Alexander, 26, *Collingham-gardens, South Kensington, S. W.*
1899		Tozer, William Henry, 28, *Abingdon-street, Westminster, S. W.*
1868		*Treatt, Frank Burford (*Police Magistrate*), *Court House, Hillston, New South Wales.*
1900		Trenerry, Charles Farley, A.I.A., 3, *North-road, Clapham-park, S. W.*
1868		Tritton, Joseph Herbert, 54, *Lombard-street, E.C.*
1890		*Turner, Rev. Harward, M.D. (Paris), B.Sc., F.R.M.S.,
1885		Turner, William (*c/o The Librarian*), *Free Public Library, Trinity-street, Cardiff.*
1892		Tyler, Edgar Alfred, 9, *Old Jewry Chambers, E.C.*
1841		Tyndall, William Henry, F.I.A., *Morlands, Oxford-road, Redhill.*

Year of Election.		
1877	*c d p*	*Urlin, Richard Denny, 22, *Stafford-terrace*, *Phillimore-gardens*, *W.*
1888		Van Raalte, Marcus, 22, *Austin Friars*, *E.C.*
1889		*Venning, Charles Harrison, 33, *Old Broad-street*, *E.C.*
1888		Verdin, William Henry, J.P., *Winsford*, *Cheshire.*
1897	*d*	Verney, Sir Edmund, Bart., F.R.G.S., F.R.M.S., *Claydon House*, *Winslow*, *Bucks.*
1894		Verney, Frederick William, 12, *Connaught-place*, *Marble Arch*, *W.*
1886	*c*	Verulam, The Right Hon. the Earl of, *Sopwell*, *St. Albans.*
1876		Vigers, Robert, 4, *Frederick's-place*, *Old Jewry*, *E.C.*
1885		Vincent, Frederick James, A.I.A. (*London*, *Glasgow*, *and Edinburgh Assurance Co.*), 26 *&* 27, *Farringdon-street*, *E.C.*
1877	*d*	Vine, Sir John Richard Somers, C.M.G., *P.O. Box* 654, *Cape Town*, *South Africa.*
1902		Wacha, Dinsha Edulji, 84, *Hornby-road*, *Fort*, *Bombay.*
1902		Wahrmann, Ernest, 16, *Zerge Gasse*, *Buda Pesth.*
1900		Walford, Adolphus Augustus Beddall (*Frank Brown & Co.*), *Finkle Chambers*, *Stockton-on-Tees.*
1890	*d*	Walford, Ernest Leopold, 11*c*, *Hyde Park-mansions*, *Marylebone-rd.*, *N.W.*

Year of Election.		
1900		Wall, Arthur Eccles, 45, *Dale-street*, *Liverpool.*
1868		Wallis, Charles James, *Hoe*, *Gomshall*, *Guildford.*
1880	*d*	Wallis, E. White, 76, *Carlton-hill*, *N.W.*
1897		Walton, J. Herbert, *St. Ronan's*, *Teddington.*
1900	*d*	Wamsley, Arthur Wilson, *Royal Exchange Ass. Co.*, *Royal Exchange*, *E.C.*
1899		Ward, Joseph Frederick, 8, *Main-street*, *Port Elizabeth.*
1893		Ward, William Cullen, F.S.I.A., 113, *Pitt-street*, *Sydney*, *N.S.W.*
1888		Warren, Reginald Augustus, J.P., *Preston-place*, *near Worthing.*
1888		Wartnaby, William Wade, *Market Harborough*, *Leicestershire.*
1865		Waterhouse, Edwin, B.A., A.I.A., F.C.A. 3, *Frederick-place*, *Old Jewry*, *E.C.*
1886	*p*	Waters, Alfred Charles, *General Register Office*, *Somerset House*, *W.C.*
1892		Wates, Charles Marshall, 47, *Westbere-road*, *West Hampstead*, *N.W.*
1902		Watson, Alfred William, F.I.A., 92, *Munsters-road*, *West Bridgford*, *Nottingham.*
1883		Watson, William Livingstone, *Reform Club Chambers*, 105, *Pall Mall*, *S.W.*
1885	*d*	*Watt, William, 17, *Queen's-road*, *Aberdeen.*
1888		Webb, Henry Barlow, *Holmdale*, *Dorking.*
1893	*d*	Weedon, Thornhill, *Bryn-Mawr*, *Woolloongabba*, *Brisbane.*
1901		Weill, Nathan Ernst, Ph.D., 25, *Beethovenstrasse*, *Frankfort-on-Main.*
1873	*c*	*Welby, The Right Hon. Lord, G.C.B., 11, *Stratton-street*, *Piccadilly*, *W.*
1874		Welch, Charles, F.S.A., *Guildhall*, *E.C.* (*Representing the Library Committee of the Corporation of the City of London.*)
1900		Weldon, Francis Seymour, *Sarandi*, *East Molesey.*
1889		Wells-Smith, Henry, A.C.A., *Kingsley House*, *Worksop*, *Notts.*
1855	*c d p*	WELTON, THOMAS ABERCROMBIE, F.C.A., 22, *Palace-road*, *Streatham-hill*, *S.W.*
1902		Westall, George, 87, *Chancery-lane*, *W.C.*

Year of Election.		
1879		*Westlake, John, K.C., LL.D., *The River House*, 3, *Chelsea Embankment.*
1901		Weston, Sydney Frank, 19, *Epperstone-rd.*, *W. Bridgford*, *Nottingham.*
1882		*Whadcoat, John Henry, F.C.A., *Rockcliffe*, *Kirkcudbrightshire.*
1878		Wharton, James, *Edgehill*, *Netherhall-gds.*, *FitzJohn's-av.*, *N.W.*
1887		Whinney, Frederick, 8, *Old Jewry*, *E.C.*
1859		Whitbread, Samuel, *Southill-park*, *Biggleswade*, *Beds.*
1887		*White, The Rev. George Cecil, M.A., *Nursling Rectory*, *Southampton.*
1863		White, Leedham, 16, *Wetherby-gardens*, *South Kensington*, *S.W.*
1888	*d*	Whitehead, Sir James, Bart., J.P., D.L. (Alderman), *Wilmington Manor*, *near Dartford.*
1895	*d*	Whitehead, The Hon. Thomas Henderson, M.L.C., *Chartered Bank of India*, *&c.*, *Hong Kong.*
1892	*c d*	WHITELEGGE, B. ARTHUR, C.B., M.D. 3, *Edwardes-place*, *Kensington*, *W.*
1884	*d*	Whiteley, William, 31, *Porchester-terrace*, *Hyde-park*, *W.*
1895		Whittuck, Edward Arthur, M.A., B.C.L., 77, *South Audley-street*, *W.*
1879		*Whitwill, Mark, J.P., 1, *Berkeley-square*, *Clifton*, *Bristol.*
1899		Wiener, Isidore, 3, *Harcourt-buildings*, *Temple*, *E.C.*
1891		Wigham, Matthew Thomas, A.S.A.A. 826, *Salisbury House*, *London Wall*, *E.C.*
1884		Wightman, Charles, 1, *Fenchurch-avenue*, *E.C.*
1895		Wilenkin, Gregory, 7, *Wetherby-gardens*, *South Kensington*, *S.W.*
1875		Wilkinson, Thomas Read, *Vale Bank*, *Knutsford*, *Cheshire.*
1860		Willans, John Wrigley, *Armathwaite*, *Teignmouth-road*, *Torquay.*
1902		Willby, Percy Luck (37, *Walbrook*, *E.C.*), *Riverdene*, *Lansdowne-pl.*, *Richmond-on-Thames.*
1901	*d*	Willcox, Walter F., Ph.D., *Cornell University*, *Ithaca*, *New York*, *U.S.A.*
1896		*Williams, Major Charles Woolmer, *City Carlton Club*, *E.C.*
1902		Williams, Edward Thomas (*Clerkenwell Plate Glass Ins. Co.*), 211, *High-road*, *South Tottenham*, *N.*

Year of Election.		
1897		*Williams, Ernest E., *Egmont Lodge, Church-row, Old Fulham, S.W.*
1864		Williams, Frederick Bessant, F.S.A. (Scot.), 19, *Haymarket, S.W.*
1895		Williams, Harry Mallam, F.S.A. (Scot.), *Tilehurst, Priory-park, Kew.*
1888		*Williams, Robert, M.P., 20, *Birchin-lane, E.C.*
1895		*Willis, J. G., B.A., *Board of Trade, Whitehall-gardens, S.W.*
1898		Wilson, Alexander Johnstone, *Annandale, Atkin's-road, Clapham-park, S.W.*
1901		Wilson, George Thomson (*Equitable Life Ass. Soc. of U.S.*), 120, *Broadway, New York.*
1891		Wilson, Henry Joseph, M.P., *Osgathorpe Hills, Sheffield.*
1898		Wilson, Henry Wrigley, 144, *Elgin-avenue, W.*
1884		Wilson, James, *Lahore, Punjab, India.*
1874	*d*	*Wilson, Robert Porter, 5, *Cumberland-terrace, Regent's-park, N.W.*
1900		Wines, Frederick H., M.D., *Census Office, Washington, D.C., U.S.A.*
1900		Wolfe, S. Herbert, 35, *Nassau-street, New York City, U.S.A.*
1900		Wolfenden, Henry, 1, *Palace-court, Hyde-park, W.*
1902		Wolfner, Dr. Paul, *Andrássy-ut* 10. *sz., Buda Pesth.*
1902		Wood, Alfred John, *Statistical Office, Custom House, E.C.*
1897	*d p*	Wood, George Henry, 5, *Mendip View, Fishponds Causeway, Bristol.*
1897		Woodd, Basil Aubrey Hollond, *Conyngham Hall, Knaresborough, Yorks.*
1887	*d*	Woodhouse, Coventry Archer, 30, *Mincing-lane, E.C.*
1902		Woodhouse, Lister, A.C.A., *City Hall, Westminster, S.W.*
1890		Woollcombe, Robert Lloyd, LL.D., F.I. Inst., &c , 14, *Waterloo-road, Dublin.*
1890		Worroll, Charles (*Colonial Mutual Life Office*), *Adderley-street, Cape Town.*
1895		Worsfold, Edward Mowll, *Market Square, Dover.*
1878		Worsfold, Rev. John Napper, M.A., *Haddlesey Rectory, near Selby, Yorks.*
1887		Worthington, A. W., B.A., *Old Swinford, Stourbridge.*

Year of Election.		
1895		Yanagisawa, Count Yasutoshi, 1, *Shiba Yamachi*, 8, *Chôme, Tokio, Japan.*
1886	*c d p*	Yerburgh, Robert Armstrong, M.P., 25, *Kensington Gore, S.W.*
1900		Yerbury, John Edwin, *The Settlement, Tavistock-place, W.C.*
1888		*Yglesias, Miguel, 2, *Tokenhouse-buildings, E.C.*
1902		Yorke, Captain James Austin, 213, *The Grove, Hammersmith, W.*
1877		*Youll, John Gibson, *Jesmond-road, Newcastle-on-Tyne*
1897		Young, Norwood Crichton, *Summerfield, Newbury, Berks.*
1898		Young, Sydney, *The Corn Exchange, Mark-lane, E.C.*
1895	*c d p*	Yule, George Udny, *City & Guilds Institute, Exhibition-road, S.W.; and* 43, *Heathhurst-rd., Hampstead, N.W.*
1901		Zimmerman, Lawrence Wolff, 5, *Edensor-place, Dickenson-road, Rusholme, Manchester.*

⁂ *The Executive Committee request that any inaccuracy in the foregoing list may be pointed out to the* Secretary, *and that all changes of address may be notified to him, so that delay in forwarding communications and the publications of the Society may be avoided.*

HONORARY FELLOWS.

HIS MOST GRACIOUS MAJESTY THE KING,
Patron.

HIS ROYAL HIGHNESS THE PRINCE OF WALES, K.G.,
Honorary President.

Argentine Republic.

Year of Election.		
1890	*d*	**FRANCISCO LATZINA**, **Calle Maipu, 982, Buenos Ayres.** Director General of Statistics; Doctor *honoris causa* of the Faculty of Physical and Mathematical Sciences of the University of Cordoba; Knight of the Italian Order of S.S. Maurice and Lazare; Officer of the Academy of France; Member of the National Academy of Sciences, of the International Statistical Institute, of the Geographical and Statistical Societies of Paris, of the Society of Commercial Geography of Paris, and Corresponding Member of the National Historical Academy of Venezuela.

Austria-Hungary.

Year of Election.		
1890	*d*	**KARL THEODOR VON INAMA-STERNEGG**, **Vienna.** Doctor of Political Economy; Member of the Austrian House of Lords; President of the Imperial and Royal Central Statistical Commission; Professor at the University of Vienna; Member of the International Statistical Institute.
1893	*d*	**FRANZ RITTER VON JURASCHEK**, **Kärnthnerstrasse, 55, Vienna.** Doctor *Juris et Philosophiæ;* "K.K. Regierungsrath;" Member and Secretary of the Imperial and Royal Central Statistical Commission; Professor at the University of Vienna; Professor of Public Law and of Statistics at the Military Academies, Vienna; Knight of the Austrian Order of the Iron Crown (3rd Class); Officer of the Order of the Crown of Italy; Member of the Permanent Commission for Commercial Values; of the International Statistical Institute; and of the British Economic Association.
1893	*d p*	**JOSEPH KÖRÖSI**, **Budapest.** Director of the Municipal Statistical Bureau of Budapest; *Docent* at the University of Budapest; President of the Municipal Statistical Committee; Knight of Several Orders; Member of the Statistical Commissions of Hungary, Belgium, and Nijni-Novgorod; Honorary Member of the American Statistical Associations; Member of the Hungarian Academy of Science, of the International Statistical Institute, of the Statistical Societies of Manchester and Paris, of the British Economic Association, and of several other learned Societies.

China.

Year of Election.		
1890	*d*	SIR ROBERT HART, Baronet, G.C.M.G., LL.D., **Peking.** Inspector-General of Imperial Maritime Customs, China.

Denmark.

1878	*d*	VIGAND ANDREAS FALBE-HANSEN, **Copenhagen.** Director of the Statistical Bureau of the State; late Professor of Political Economy at the University of Copenhagen.
1900	*d p*	MARCUS RUBIN, **Vendersgade 25a, Copenhagen.** Knight of the Order of the "Danebrog"; Director-General of Customs and Taxation; late Director of the Statistical Bureau of the State; President of the Danish Society of Political Economy and of the Board of the Danish Society of History; Member of the International Statitiscal Institute.

France.

1880	*d p*	JACQUES BERTILLON, M.D., **1, Avenue Victoria, Paris.** Chief of the Statistical Department of the City of Paris; Member of the Superior Council of Statistics; of the Consultative Committee of Public Hygiene of France; Past President of the Statistical Society of Paris; and Member of the International Statistical Institute, &c.
1879	*d*	ARTHUR CHERVIN, M.D., **82, Avenue Victor Hugo, Paris.** Doctor of Medicine and Surgery; Director of the Paris Institute for Stammerers; Vice-President of the Statistical Society of Paris; Member of the Superior Institute, &c.
1897	*d*	JEAN JACQUES ÉMILE CHEYSSON, **4, Rue Adolphe Yvon, Paris.** Inspector-General of Bridges and Highways; Member of the International Statistical Institute; Past President of the Statistical Society of Paris; late Director of the Creusot Iron Works, of Machinery at the Paris Exhibition of 1867, and of Graphic Statistics for the Ministry of Public Works.
1878	*d*	MAXIMIN DELOCHE, **5, Rue Herschel, Paris.** Honorary Director of the General Statistics of France; Commander of the Legion of Honour; Officer of the Order of Public Instruction; Commander of the Austrian Order of Francis Joseph; Member of the Institute of France, and of several learned Societies.

Year of Election.

France—*Contd.*

1890 *d p* ALFRED DE FOVILLE, **8, Rue du Regard, Paris.**
Late Master of the Mint; Councillor of the Court of Accounts; Officer of the Legion of Honour; Member of the Institute of France; Past President of the Statistical Society of Paris; Member of the International Statistical Institute and of the Superior Council of Statistics.

1870 *d* CLÉMENT JUGLAR, **167, Rue St. Jacques, Paris.**
Member of the Institute of France; Past President of the Statistical Society of Paris; Vice-President of the Society of Political Economy of Paris; Member of the International Statistical Institute.

1860 *d p* PIERRE ÉMILE LEVASSEUR, **26, Rue Monsieur le Prince, Paris.**
Member of the Institute of France; Professor at the College of France and at the Conservatoire of Arts and Trades; President of the Statistical Commission for Primary Instruction; Past President of the Statistical Society of Paris; Vice-President of the International Statistical Institute, of the Superior Council of Statistics, and of the Society of Political Economy, &c.

1887 DANIEL WILSON, **2, Avenue d'Jéna, Paris.**
Ex-Under-Secretary of State; Past President of the Statistical Society of Paris.

1876 *d* THE PRESIDENT (for the time being) OF THE STATISTICAL SOCIETY OF PARIS, **28, Rue Danton, Paris.**

Germany.

1890 *d* KARL JULIUS EMIL BLENCK, **Lindenstrasse, 28, Berlin, S.W.**
"Geheimer Ober-Regierungsrath;" Director of the Royal Statistical Bureau of Prussia, also Member of the Prussian Central Statistical Commission and of the Central Board of Control of the Survey of Prussia; Member of the International Statistical Institute; Honorary Member or Member of several learned Societies.

1896 *d* CARL VICTOR BÖHMERT, **Hospitalstrasse, 4, Dresden.**
"Geheimer Regierungsrath;" Doctor *Juris;* Late Director of the Statistical Bureau of Saxony; Professor of Political Economy and Statistics in the Polytechnical High School of Dresden; Member of the International Statistical Institute.

Germany—*Contd.*

Year of Election.		
1877	*d*	GEORG VON MAYR, **Georgenstrasse, 38, Munich.** Ex-Under Secretary of State in the Imperial Ministry for Alsace-Lorraine; formerly Director of the Royal Statistical Bureau of Bavaria; Honorary Member of the International Statistical Institute; Ordinary Professor of Statistics, Finances, and Political Economy at the University of Munich; Associate of the Statistical Society of Paris.
1860		GEORG KARL LEOPOLD SEUFFERT, **Maximiliansplatz, Nr. 9/3, Munich.** Formerly Chief Inspector and Director of the Royal Custom-House at Simbach; Knight of the Bavarian Order of St. Michael 1st Class; Corresponding Member of the Central Statistical Commission of Belgium; Member of the "Freies Deutsches Hochstift zu Frankfurt a/M."
1897		ADOLPH WAGNER, Ph.D., **51, Lessingstrasse, Berlin, N.W.** Professor of Political Economy at the University of Berlin; Member of the Statistical Bureau of Prussia, and of the International Statistical Institute.
1876	*d*	THE PRESIDENT (for the time being) OF THE GEOGRAPHICAL AND STATISTICAL SOCIETY OF FRANKFORT, **Stadtbibliothek, Frankfort.**

Italy.

Year of Election.		
1879	*d*	GEROLAMO BOCCARDO, **Piazzia Santi Apostoli, 74, Rome.** Senator; Councillor of State; Doctor of Laws; late Professor at the University and at the Superior Naval School of Genoa; Grand Officer of the Orders of SS. Maurice and Lazare, and of the Crown of Italy; Knight of the Order of Civil Merit of Savoy; Member of the Academy "dei Lincei," of the Academy of Naples, of the Institutes of Science of Milan, Venice, and Palermo, of the Cobden Club, of the International Statistical Institute, of the Academy of Madrid, and of the Deputation of National History, &c.
1874	*d*	LUIGI, BODIO **153, Via Torino, Rome.** Senator; Doctor of Laws; Professor of Industrial Legislation and of Statistics at the Engineering College, Rome; Councillor of State; Commissioner-General of Emigration; Secretary of the International Statistical Institute; Grand Officer of the Order of SS. Maurice and Lazare; Knight of the Order of Civil Merit of Savoy; Correspondent of the Institute of France (Academy of Moral and Political Sciences).

Year of Election.

Italy—*Contd.*

1899 *d* CARLO FRANCESCO FERRARIS, **Padua.**
Professor of Administrative Science and Law, and of Statistics at the Royal University of Padua; Member of the Superior Council of Statistics and of the Superior Council of Public Education of Italy; Member of the Academy "dei Lincei," of the Royal Institute of Science at Venice, of the International Statistical Institute, and Honorary Member of the Swiss Statistical Society; Ex-Member of the Italian Parliament.

Mexico.

1895 *d* DON MANUEL FERNANDEZ LEAL, **Mexico.**
Director of the Mint; Late Secretary of State, Department of "Fomento," Colonization and Industry.

Netherlands.

1896 *d* NICOLAAS GERARD PIERSON, **The Hague.**
Minister of Finance; Late President of the Netherlands' Bank; Late Professor of Political Economy at the University of Amsterdam; Member of the International Statistical Institute.

Roumania.

1896 *d* GRÉGOIRE P. OLANESCO, **Rue Grivitza 36, Bucharest.**
Late Director-General of Customs; Late General Secretary, Ministry of Finance; Officer of the Legion of Honor; Member of the International Statistical Institute.

Russia.

1873 *d* HIS EXCELLENCY PIERRE SEMENOV, **St. Petersburg.**
Senator; Privy Councillor to His Imperial Majesty; President of the Imperial Statistical Council; President of the Imperial Geographical Society; Honorary Member of the Academy of Sciences in St. Petersburg; Associate of the Statistical Society of Paris.

1890 *d* HIS EXCELLENCY NICOLAS TROÏNITSKY, **Kovenskoy-pereoulok, Nr 9, St. Petersburg.**
Former Governor; Privy Councillor; Director of the Central Statistical Committee of the Ministry of the Interior; Life Member of the Statistical Council, of the Imperial Geographical Society of Russia, and Vice-President of the International Statistical Institute, and Member of the Statistical Society of Paris.

Year of Election.

Spain.

1845 HIS EXCELLENCY SEÑOR DON JOSÉ MAGAZ Y JAYME, **Calle de Leon, 13, Madrid.**

Advocate, Gentleman of His Majesty's Chamber, and Member of the Council of State; Ex-Deputy of the Cortes; Ex-Senator; Ex-Director-General of Treasury; Ex-Under-Secretary of the Ministry of Finance; Grand Cross of the Order of Isabella Catolica; Commander of the Order of Carlos 3°.

Sweden and Norway.

1858 *d* THORKIL HALVORSEN ASCHEHOUG, **41, Josephinegade Christiania.**

Doctor of Laws; Professor of Political Economy at the University of Christiania; Assessor Extraordinary of the Supreme Court of Norway; Commander of the First Class of the Norwegian Order of St. Olave, of the Swedish Order of the North Star; and of the Danish Order of the "Dannebroge;" Corresponding Member of the Institute of France; Member of the Institute of International Law, of the International Statistical Institute, and of the Academies of Christiania, Stockholm, Trondhjem and Upsala, also of the Royal Historical Society of Denmark.

1874 *d* ANDERS NICOLAI KIÆR, **Christiania.**

Director of the Central Statistical Bureau of Norway; Associate of the Statistical Society of Paris; Member of the International Statistical Institute.

1890 *d* ELIS SIDENBLADH., Ph.D., **Stockholm.**

Late Director in Chief of the Central Statistical Bureau of Sweden; Late President of the Royal Statistical Commission; Commander, Officer, and Knight of several Swedish and Foreign Orders; Member of the Royal Academies of Sciences and of Agriculture, at Stockholm, of the International Statistical Institute, and Honorary and Corresponding Member of several foreign learned Societies.

Switzerland.

1890 *d* LOUIS GUILLAUME, **Bern.**

Doctor of Medicine; Director of the Federal Statistical Bureau; Secretary of the International Penitentiary Commission; Member of the International Statistical Institute.

United States.

1873 THE HON. WILLIAM BARNES, **Thurlow-terrace, Albany, N.Y.**

Lawyer; Ex-Superintendent of the Insurance Department, State of New York.

United States—*Contd.*

Year of Election.		
1881	*d*	JOHN SHAW BILLINGS, **New York Public Library, New York City.** M.A., M.D., LL.D., Edinburgh and Harvard; D.C.L., Oxon; Surgeon, U.S. Army; Member of the National Academy of Sciences, of the International Statistical Institute, &c.
1896	*d*	WORTHINGTON CHAUNCEY FORD, **Chevy Chase, Maryland.** Late Chief of the Bureau of Statistics, Treasury Department; Chief of the Bureau of Statistics, Department of State; Member of the International Statistical Institute.
1870	*d*	THE HON. JOHN ELIOT SANFORD, **Taunton, Mass.** Lawyer; Ex-Speaker of the House of Representatives; Ex-Insurance Commissioner; Ex-Chairman of the Board of Harbour and Land Commissioners; Chairman of the Board of Railroad Commissioners.
1893	*d*	THE HON. CARROLL DAVIDSON WRIGHT, M.A., LL.D., **Washington.** Commissioner of the U.S. Department of Labour; late Chief of the Massachusetts Bureau of Statistics of Labour; President of the Association for the promotion of Profit Sharing; late President and now Vice-President of the American Social Science Association; President of the American Statistical Association; Member of the American and British Economic Associations, of the International Statistical Institute; Hon. Member of the Russian Imperial Academy of Sciences; Corresponding Member of the Institute of France; and Member of several other learned Societies.
1877	*d*	EDWARD YOUNG, M.A., Ph.D., **207, Maryland Avenue, N.E., Washington, U.S.A.** Late Consul of the United States; formerly Chief of the Bureau of Statistics, United States of America; Member of the Geographical Society of Paris.

India.

1886	*d*	JAMES EDWARD O'CONOR, C.I.E., **Calcutta and Simla.** Director-General of Statistics; Assistant Secretary with the Supreme Government, India, Department of Finance and Commerce; Member of the International Statistical Institute.

Dominion of Canada.

1894	*d*	GEORGE JOHNSON, **Ottawa.** Statistician, Department of Agriculture, Ottawa, Canada.

New South Wales.

1893	*d p*	TIMOTHY AUGUSTINE COGHLAN, **Sydney.** Government Statistician of New South Wales; Member of the Public Science Board; formerly Registrar of Friendly Societies and Trade Unions; and Assistant Engineer for Harbours and Rivers.

Year of Election.

New Zealand.

1876 *d* SIR JAMES HECTOR, K.C.M.G., M.D., F.R.S.S. L. and E., F.G.S., &c., **Wellington.**
Director of the Geological Survey, of the Meteorological Department, and of the New Zealand Institute &c.

Tasmania.

1894 *d* ROBERT MACKENZIE JOHNSTON, **Hobart.**
Registrar-General and Government Statistician; Fellow and Member of Council of the Royal Society of Tasmania; Member of Council and of Senate of the University of Tasmania; Fellow and Past President of Section F (*Economics* and *Statistics*) of the Australasian Association for the Advancement of Science; Fellow of the Royal Geographical Society of Australia; Honorary Foreign Corresponding Member of the Geological Society of Edinburgh; Fellow of the Linnean Society of London.

1876 *d p* EDWIN CRADOCK NOWELL, J.P., **Hobart.**
Clerk of Executive and Legislative Councils of Tasmania; late Government Statistician; Clerk to the Federal Council of Australasia in its four Sessions.

Victoria.

1858 *d* WILLIAM HENRY ARCHER, K.C.P., K.S.G., F.I.A., F.L.S., &c., **Grace Park, Hawthorne, Melbourne.**
Barrister-at-Law.

Great Britain and Ireland.

1876 *d* THE PRESIDENT (for the time being) OF THE MANCHESTER STATISTICAL SOCIETY, **63, Brown Street, Manchester.**

1876 *d* THE PRESIDENT (for the time being) OF THE STATISTICAL AND SOCIAL INQUIRY SOCIETY OF IRELAND, **35, Molesworth Street, Dublin.**

NOTE.—The Executive Committee request that any inaccuracies in the foregoing List of HONORARY FELLOWS may be pointed out, and that all changes of address may be notified to the Secretary, so that delay in forwarding communications and the publications of the Society may be avoided.

ROYAL STATISTICAL SOCIETY.

Copy of Charter.

Victoria, by the Grace of God of the United Kingdom of Great Britain and Ireland Queen, Defender of the Faith.

To all to whom these Presents shall come, Greeting:—

Whereas Our Right trusty and entirely beloved cousin, Henry, Third Marquess of Lansdowne, Knight of the Most Noble Order of the Garter, Charles Babbage, Fellow of the Royal Society, John Elliott Drinkwater, Master of Arts, Henry Hallam, Fellow of the Royal Society, the Reverend Richard Jones, Master of Arts, and others of Our loving subjects, did, in the year One thousand eight hundred and thirty-four, establish a Society to collect, arrange, digest and publish facts, illustrating the condition and prospects of society in its material, social, and moral relations; these facts being for the most part arranged in tabular forms and in accordance with the principles of the numerical method, and the same Society is now called or known by the name of "The "Statistical Society."

And Whereas it has been represented to Us that the same Society has, since its establishment, sedulously pursued such its proposed objects, and by its publications (including those of its transactions), and by promoting the discussion of legislative and other public measures from the statistical point of view, has greatly contributed to the progress of statistical and economical science.

And Whereas distinguished individuals in foreign countries, as well as many eminent British subjects, have availed themselves of the facilities offered by the same Society for communicating important information largely extending statistical knowledge; and the general interest now felt in Statistics has been greatly promoted and fostered by this Society.

And Whereas the same Society has, in aid of its objects, collected a large and valuable library of scientific works and charts, to which fresh accessions are constantly made; and the said Society has hitherto been supported by annual and other subscriptions and contributions to its funds, and has lately acquired leasehold premises in which the business of the said Society is carried on.

And Whereas in order to secure the property of the said Society, to extend its operations, and to give it its due position among the Scientific Institutions of Our kingdom, We have been besought to grant to Sir Rawson William Rawson, Knight Commander of the Most Distinguished Order of St. Michael and St. George, and Companion of the Most Honourable Order of the Bath, and to those who now are Members of the said Society, or who shall from time to time be elected Fellows of the Royal Statistical Society hereby incorporated, Our Royal Charter of Incorporation for the purposes aforesaid.

1. **Now Know Ye** that We, being desirous of encouraging a design so laudable and salutary, of Our especial grace, certain knowledge and mere motion, have willed, granted, and declared and Do by these Presents, for Us, Our heirs and successors, will, grant, and declare that the said Sir Rawson William Rawson, Knight Commander of the Most Distinguished Order of St. Michael and St. George, and Companion of the Most Honourable Order of the Bath, and such other of Our loving subjects as now are Members of the said Society, or shall from time to time be elected Fellows of "The Royal Statistical Society" hereby incorporated according to such regulations or bye laws as shall be hereafter framed or enacted, and their successors, shall for ever hereafter be by virtue of these presents one body politic and corporate, by the name of "**The Royal Statistical Society**," and for the purposes aforesaid, and by the name aforesaid, shall have perpetual succession and a common seal, with full power and authority to alter, vary, break, and renew the same at their discretion, and by the same name to sue and be sued, implead and be impleaded, answer and be answered, unto and in every Court of Us, Our heirs and successors.

2. **The** Royal Statistical Society, in this Charter hereinafter called "The Society," may, notwithstanding the statutes of mortmain, take, purchase, hold and enjoy to them and their successors a hall, or house, and any such messuages or hereditaments of any tenure as may be necessary, for carrying out the purposes of the Society, but so that the yearly value thereof to be computed at the rack rent which might be gotten for the same at the time of the purchase or other acquisition, and including the site of the said hall, or house, do not exceed in the whole the sum of Two thousand pounds.

3. **There** shall be a Council of the Society, and the said Council and General Meetings of the Fellows to be held in accordance with this Our Charter shall, subject to the provisions of this Our Charter, have the entire management and direction of the concerns of the Society.

4. **There** shall be a President, Vice-Presidents, a Treasurer or Treasurers, and a Secretary or Secretaries of the Society. The Council shall consist of the President, Vice-Presidents, and not

less than twenty Councillors; and the Treasurer or Treasurers and the Secretary or Secretaries if honorary.

5. The several persons who were elected to be the President, Vice-Presidents, and Members of the Council of the Statistical Society at the Annual Meeting held in the month of June, One thousand eight hundred and eighty-six, shall form the first Council of the Society, and shall continue in office until the first Election of officers is made under these presents as hereinafter provided.

6. General Meetings of the Fellows of the Society may be held from time to time, and at least one General Meeting shall be held in each year. Every General Meeting may be adjourned, subject to the provisions of the Bye Laws. The following business may be transacted by a General Meeting, viz.:—

(*a*.) The Election of the President, Vice-Presidents, Treasurer or Treasurers, Secretary or Secretaries, and other Members of the Council of the Society.

(*b*.) The making, repeal, or amendment of Bye Laws.

(*c*.) The passing of any proper resolution respecting the affairs of the Society.

7. Bye Laws of the Society may be made for the following purposes, and subject to the following conditions, viz.:—

(*a*.) For prescribing the qualification and condition of tenure of office of the President; the number, qualifications, functions, and conditions of tenure of office of the Vice-Presidents, Treasurers, Secretaries, and Members of Council, and Officers of the Society; for making regulations with respect to General Meetings and Meetings of the Council and proceedings thereat, and for the election of any persons to be Honorary Fellows or Associates of the Society, and defining their privileges (but such persons, if elected, shall not be Members of the Corporation), and for making regulations respecting the making, repeal and amendment of Bye Laws, and generally for the government of the Society and the management of its property and affairs.

(*b*.) The first Bye Laws shall be made at the first General Meeting to be held under these presents, and shall (amongst other things) prescribe the time for holding the first election of officers under these presents.

8. The General Meetings and adjourned General Meetings of the Society shall take place (subject to the rules or bye laws of the Society, and to any power of convening or demanding a

Special General Meeting thereby given) at such times and places as may be fixed by the Council.

9. The existing rules of the Statistical Society, so far as not inconsistent with these presents, shall be in force as the Bye Laws of the Society until the first Bye Laws to be made under these presents shall come into operation.

10. Subject to these presents and the Bye Laws of the Society for the time being, the Council shall have the sole management of the income, funds, and property of the Society, and may manage and superintend all other affairs of the Society, and appoint and dismiss at their pleasure all salaried and other officers, attendants, and servants as they may think fit, and may do all such things as shall appear to them necessary or expedient for giving effect to the objects of the Society.

11. The Council shall once in every year present to a General Meeting a report of the proceedings of the Society, together with a statement of the receipts and expenditure, and of the financial position of the Society, and every Fellow of the Society may, at reasonable times to be fixed by the Council, examine the accounts of the Society.

12. The Council may, with the approval of a General Meeting from time to time appoint fit persons to be Trustees of any part of the real or personal property of the Society, and may make or direct any transfer of such property so placed in trust necessary for the purposes of the trust, or may, at their discretion, take in the corporate name of the Society conveyances or transfers of any property capable of being held in that name. Provided that no sale, mortgage, incumbrance, or other disposition of any hereditaments belonging to the Society shall be made unless with the approval of a General Meeting.

13. No Rule, Bye Law, Resolution, or other proceeding shall be made or had by the Society, or any meeting thereof, or by the Council, contrary to the general scope or true intent and meaning of this Our Charter, or the laws or statutes of Our Realm, and anything done contrary to this present clause shall be void.

In Witness whereof We have caused these Our Letters to be made Patent.

Witness Ourself, at Westminster, the thirty-first day of January, in the fiftieth year of Our Reign.

By Warrant under the Queen's Sign Manual,

(L. S.)

MUIR MACKENZIE.

ROYAL STATISTICAL SOCIETY.

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BYE-LAWS OF THE ROYAL STATISTICAL SOCIETY.

Objects of the Society.

1. The objects of the Royal Statistical Society are to collect, arrange, digest and publish facts, illustrating the condition and prospects of society in its material, social and moral relations; these facts being for the most part arranged in tabular forms and in accordance with the principles of the numerical method.

The Society collects new materials, condenses, arranges, and publishes those already existing, whether unpublished or published in diffuse and expensive forms in the English or in any foreign language, and promotes the discussion of legislative and other public measures from the statistical point of view. These discussions form portions of the published Transactions of the Society.

Constitution of the Society.

2. The Society consists of Fellows and Honorary Fellows, elected in the manner hereinafter described.

Number of Fellows and Honorary Fellows.

3. The number of Fellows is unlimited. Foreigners or British subjects of distinction residing out of the United Kingdom may be admitted as Honorary Fellows, of whom the number shall not be more than seventy at any one time.

Proposal of Fellows.

4. Every Candidate for admission as a Fellow of the Society shall be proposed by two or more Fellows, who shall certify from their personal knowledge of him or of his works, that he is a fit person to be admitted a Fellow of the Society. Every such certificate having been read and approved of at a Meeting of the Council, shall be suspended in the office of the Society until the following Ordinary Meeting, at which the vote shall be taken.

Election of Fellows.

5. In the election of Fellows, the votes shall be taken by ballot. No person shall be admitted unless at least sixteen Fellows vote, and unless he have in his favour three-fourths of the Fellows voting.

Admission of Fellows.

6. Every Fellow elect is required to take the earliest opportunity of presenting himself for admission at an Ordinary Meeting of the Society.

The manner of admission shall be thus:—

Immediately after the reading of the minutes, the Fellow elect, having first paid his subscription for the current year or his composition, shall sign the obligation contained in the Fellowship-book, to the effect following:—

"We, who have underwritten our "names, do hereby undertake, each for "himself, that we will endeavour to "further the good of the Royal Statis- "tical Society for improving Statistical "Knowledge, and the ends for which "the same has been founded; that we "will be present at the Meetings of the "Society as often as conveniently we "can, and that we will keep and fulfil "the Bye-laws and Orders of this "Society: provided that whensoever "any one of us shall make known, by "writing under his hand, to the Secre- "taries for the time being, that he "desires to withdraw from the Society, "he shall be free thenceforward from "this obligation."

Whereon the President, taking him by the hand, shall say,—"By the "authority, and in the name of the "Royal Statistical Society, I do admit "you a Fellow thereof."

Upon their admission Fellows shall have the right of attaching to their names the letters F.S.S., but not in connection with any trading or business advertisement other than the publication of any book or literary notice.

Admission of Honorary Fellows.

7. There shall be Two Meetings of the Society in the year, on such days as shall be hereafter fixed by the Council, at which Honorary Fellows may be elected.

No Honorary Fellow can be recommended for election but by the Council. At any Meeting of the Council any Member thereof may propose a Foreigner or

British subject of distinction residing out of the United Kingdom, delivering at the same time a written statement of the qualifications of, offices held by, and published works of, the person proposed; and ten days' notice at least shall be given to every Member of the Council, of the day on which the Council will vote by ballot on the question whether they will recommend to the Society the election of the person proposed. No such recommendation to the Society shall be adopted unless at least three-fourths of the votes are in favour thereof.

Notice of the recommendation shall be given from the chair at the Meeting of the Society next preceding that at which the vote shall be taken thereon. No person shall be elected an Honorary Fellow unless sixteen Fellows vote and three-fourths of the Fellows voting be in his favour.

The Council shall have power to elect as Honorary Fellows, the Presidents for the time being of the Statistical Societies of Dublin, Manchester, and Paris, and the President of any other Statistical Society at home or abroad.

Payments by Fellows.

8. Every Fellow of the Society shall pay a yearly subscription of Two Guineas, or may at any time compound for his future yearly payments by paying at once the sum of Twenty Guineas,* unless the Annual Subscription or Composition Fee shall be remitted by the Council; provided that the number of Fellows whose Annual Subscription or Composition Fee shall have been thus remitted, do not exceed five at any one time.

Every person elected to the Society shall pay his first subscription (or if he desire to become a Life Fellow, his composition) within three months at the latest of the date of his election, if he be resident in the United Kingdom. If he be resident abroad, this period shall be six months. If payment be not made within the time specified above, the election shall be void.

Defaulters.—Withdrawal of Fellows.

9. All yearly payments are due in advance on the 1st of January, and if any Fellow of the Society have not paid his subscription before the 1st of July, he shall be applied to in writing by the Secretaries, and if the same be not paid before the 1st of January of the second year, a written application shall again be made by the Secretaries, and the Fellow in arrear shall cease to receive the Society's publications, and shall not be entitled to any of the privileges of the Society until such arrears are paid; and if the subscription be not discharged before the 1st of February of the second year, the name of the Fellow thus in arrear shall be exhibited on a card suspended in the office of the Society; and if, at the next Annual General Meeting, the amount still remain unpaid, the defaulter shall, unless otherwise authorised by the Council, be announced to be no longer a Fellow of the Society, the reason for the same being at the same time assigned. No Fellow of the Society can withdraw his name from the Society's books, unless all arrears be paid; and no resignation will be deemed valid unless a written notice thereof be communicated to the Secretaries. No Fellow shall be entitled to vote at any Meeting of the Society until he shall have paid his subscription for the current year.

Expulsion of Fellows.

10. If any Fellow of the Society, or any Honorary Fellow, shall so demean himself that it would be for the dishonour of the Society that he longer continue to be a Fellow or Honorary Fellow thereof, the Council shall take the matter into consideration; and if the majority of the Members of the Council present at some Meeting (of which and of the matter in hand such Fellow or Honorary Fellow, and every Member of the Council, shall have due notice) shall decide by ballot to recommend that such Fellow or Honorary Fellow be expelled from the Society, the President shall at its next Ordinary Meeting announce to the Society the recommendation of the Council, and at the following Meeting the question shall be decided by ballot, and if at least three-fourths of the

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* Cheques should be made payable to "The Royal Statistical Society," and crossed "Messrs. Drummond and Co."

number voting are in favour of the expulsion, the President shall forthwith cancel the name in the Fellowship-book, and shall say,—

"By the authority and in the name "of the Royal Statistical Society, I do "declare that A. B. (naming him) is no "longer a Fellow (or Honorary Fellow) "thereof."

And such Fellow or Honorary Fellow shall thereupon cease to be of the Society.

Trustees.

11. The property of the Society may be vested in three Trustees, chosen by the Fellows. The Trustees are eligible to any other offices in the Society.

President, Council, and Officers.

12. The Council shall consist of a President and thirty Members, together with the Honorary Vice-Presidents.

From the Council shall be chosen four Vice-Presidents, a Treasurer, the Honorary Secretaries, and a Foreign Secretary, who may be one of the Honorary Secretaries. The former Presidents who are continuing Fellows of the Society shall be Honorary Vice-Presidents. Any five of the Council shall be a quorum.

Election of President and Officers.

13. The President, Members of Council, Treasurer, and Honorary and Foreign Secretaries shall be chosen annually by the Fellows at the Annual General Meeting.

The Vice-Presidents shall be chosen annually from the Council by the President.

The President shall not be eligible for the office more than two years in succession.

Six Fellows, at least, who were not of the Council of the previous year, shall be annually elected; and of the Members retiring three at least shall be those who have served longest continuously on the Council, unless they hold office as Treasurer or Honorary or Foreign Secretary.

Nomination of President, Council, and Officers.

14. The Council shall, previously to the Annual General Meeting, nominate, by ballot, the Fellows whom they recommend to be the next President and Council of the Society. They shall also recommend for election a Treasurer and the Secretaries (in accordance with Rule 12). Notice shall be sent to every Fellow whose residence is known to be within the limits of the metropolitan post, at least a fortnight before the Annual General Meeting, of the names of Fellows recommended by the Council.

Extraordinary Vacancies.

15. On any extraordinary vacancy occurring of the Office of President, or other Officer of the Society, the Honorary Secretaries shall summon the Council with as little delay as possible, and a majority of the Council, thereupon meeting in their usual place, shall, by ballot, and by a majority of those present, choose a new President, or other Officer of the Society, to be so until the next Annual General Meeting.

Committees.

16. The Council shall have power to appoint Committees of Fellows and also an Executive Committee of their own body. The Committees shall report their proceedings to the Council. No report shall be communicated to the Society except by the Council.

Auditors.

17. At the first Ordinary Meeting of each year, the Fellows shall choose two Fellows, not being Members of the Council, as Auditors, who, with one of the Council, chosen by the Council, shall audit the Treasurer's accounts for the past year, and report thereon to the Society, which report shall be presented at the Ordinary Meeting in February. The Auditors shall be empowered to examine into the particulars of all expenditure of the funds of the Society, and may report their opinion upon any part of it.

Meetings Ordinary and General.

18. The Ordinary Meetings of the Society shall be held monthly, or oftener, during the Session, which shall be from the 1st of November to the 1st of July in each year, both inclusive, on such days and at such hours as the Council shall declare. The Annual General Meeting shall be held on such day in the month of June of each year as shall be appointed by the Council for the time being.

Business of Ordinary Meetings.

19. The business of the Ordinary Meetings shall be to elect and admit Fellows, to read and hear reports, letters, and papers on subjects interesting to the Society. Nothing relating to the bye-laws or management of the Society shall be discussed at the Ordinary Meetings, except that the Auditors' Report shall be presented at the Ordinary Meeting in February, and that the Minutes of the Annual General Meeting, and of every Special General Meeting, shall be submitted for confirmation at the next Ordinary Meeting after the day of such Annual or Special General Meeting. Strangers may be introduced to the Ordinary Meetings, by any Fellow, with the leave of the President, Vice-President, or other Fellow presiding at the Meeting.

Business of Annual General Meeting.

20. The business of the Annual General Meeting shall be to elect the Officers of the Society, and to discuss questions on its bye-laws and management. No Fellow or Honorary Fellow shall bo proposed at the Annual General Meeting. No Fellow shall propose any alteration of the rules or bye-laws of the Society at the Annual General Meeting, unless after three weeks' notice thereof given in writing to the Council, but amendments to any motion may be brought forward without notice, so that they relate to the samo subject as the motion. The Council shall give fourteen days' notice to every Fellow of all questions of which such notice shall have been given to them.

Special General Meetings.

21. The Council may, at any time, call a Special General Meeting of the Society when it appears to them necessary. Any twenty Fellows may require a Special General Meeting to be called, by notice in writing signed by them, delivered to one of the Secretaries, specifying the questions to be moved. The Council shall, within one week of such notice, appoint a day for such Special General Meeting, and shall give at least one week's notice of every Special General Meeting, and of the questions to be moved, to every Fellow within the limits of the metropolitan post, whose residence is known. No business shall be brought forward at any Special General Meeting othor than that specified in the notice convening the same.

Duties of the President.

22. The President shall preside at all Meetings of the Society, Council, and Committees which he shall attend, and in case of an equality of votes, shall have a second or casting vote. He shall sign all diplomas of admission of Honorary Fellows. He shall admit and expel Fellows and Honorary Fellows, according to the bye-laws of the Society.

Duties of the Treasurer.

23. The Treasurer shall receive all moneys due to, and pay all moneys owing by, the Society, and shall keep an account of his receipts and payments. No sum exceeding Ten Pounds shall be paid but by order of the Council, excepting always any lawful demand for rates or taxes. The Treasurer shall invest the moneys of the Society in such manner as the Council shall from time to time direct.

Duties of the Honorary Secretaries.

24. The Honorary Secretaries shall, under the control of the Council, conduct the correspondence of the Society; they or one of them shall attend all Meetings of the Society and Council, and shall duly record the Minutes of the Proceedings. They shall issue the requisite notices, and read such papers to the Society as the Council may direct.

Powers of the Vice-Presidents.

25. A Vice-President, whether Honorary or nominated, in the chair, shall act with the power of the President in presiding and voting at any Meeting of the Society or Council, and in admitting Fellows; but no Vice-President shall be empowered to sign diplomas of admission of Honorary Fellows, or to expel Fellows or Honorary Fellows. In the absence of the President and Vice-Presidents, any Member of Council may be called upon by the Fellows then present, to preside at an Ordinary or Council Meeting, with the same power as a Vice-President.

Powers of the Council.

26. The Council shall have control over the papers and funds of the Society, and may, as they shall see fit, direct the publication of papers and the expenditure of the funds, in accordance with the provisions of the Charter.

27. The Council shall be empowered at any time to frame Regulations not inconsistent with these bye-laws, which shall be and remain in force until the next Annual General Meeting, at which they shall be either affirmed or annulled; but no Council shall have power to renew Regulations which have once been disapproved at an Annual General Meeting.

28. The Council shall have the custody of the Common Seal. The Common Seal shall not be affixed to any instrument, deed, or other document, except by order of the Council and in the presence of at least two Members of the Council and in accordance with such other regulations as the Council shall from time to time prescribe. The fact of the seal having been so affixed shall be entered on the minutes of the Council.

29. No Dividend, Gift, Division, or Bonus in money shall be made by the Society, unto or between any of the Fellows or Members, except as hereinafter provided.

30. The Council shall publish a Journal of the Transactions of the Society, and such other Statistical Publications as they may determine upon, and may from time to time pay such sums to Editors and their assistants, whether Fellows of the Society or not, as may be deemed advisable.

31. All communications to the Society are the property of the Society, unless the Council allow the right of property to be specially reserved by the Contributors.

REGULATIONS OF THE LIBRARY.

1. The Library and the Reading Room are open daily for the use of Fellows from 10 a.m. till 5 p.m., except on Saturdays, when they are closed at 2 p.m.

2. No Fellow, other than an Officer of the Society, is entitled to use the address of the Society in any communication to the Public Press.

3. Fellows of the Society are permitted to take out books on making personal application, or by letter addressed to the Librarian, all expenses for carriage being paid by the Fellows.

4. No Fellow shall have more than ten volumes out at any one time. Fellows are not to keep any books longer than one month. Any Fellow detaining a book for more than a month shall not be permitted to take another from the Library until the book detained shall have been returned.

On the termination of the year for which the subscription has not been paid, a Fellow whose payment is in arrear shall cease to have the privilege of using the Library or of borrowing books therefrom.

5. Scientific Journals and Periodicals are not circulated until the volumes are completed and bound.

6. Cyclopædias and works of reference are not circulated, but may be lent on the written order of an Honorary Secretary for a period not exceeding *seven* days. The Secretary or Librarian is allowed at his discretion to lend works of reference for a period not exceeding *three* days, reporting at the same time to the Honorary Secretaries. If works so lent be not returned within the specified time, the borrower shall incur a fine of one shilling per day per volume for each day they are detained beyond the time specified.

7. Any Fellow who damages or loses a book, shall either replace the work, or pay a fine equivalent to its value.

8. Books taken from the shelves for reference, are *not* to be replaced, but must be laid on the Library table.

9. The Librarian shall report to the Council any infringement of these regulations, and lay upon the table at each regular Meeting (*a*) a List of any "Works of Reference" that may have been borrowed, and (*b*) a List of Books that have been out more than a month.

DONORS TO THE LIBRARY.

During the Year (ending 15th September) 1902.

(a) Foreign Countries.

Argentine Republic—

General Statistical Bureau.
Ministry of the Interior.
National Health Department.
Buenos Ayres. Provincial and Municipal Statistical Bureaus.

Austria and Hungary—

Central Statistical Commission.
Ministry of Agriculture.
„ Finance.
„ Railways.
Statistical Department of the Ministry of Commerce.
Austrian Labour Department.
Bohemian Statistical Bureau.
Bosnia and Herzegovina Statistical Bureau.
Hungarian Statistical Bureau.
Brünn Statistical Bureau.
Budapest Statistical Bureau.
Prague Statistical Bureau.

Belgium—

Army Medical Department.
Bureau of General Statistics.
Belgian Labour Department.
Bruges, The Burgomaster.
Brussels Bureau of Hygiene.
Hasselt. The Burgomaster.
Royal Academy of Sciences.

Brazil. The Statistical Bureau.

Bulgaria. Statistical Bureau.

Chile. The Central Statistical Bureau.

China. Imperial Maritime Customs.

Denmark—

Royal Statistical Bureau.
Copenhagen Statistical Bureau.
Political Economy Society

Egypt—

Department of Public Health.
Director-General of Customs.
„ Post Office.
Ministry of Finance.
Comité de Conservation des Monuments de l'Art Arabe.

France—

Colonial Office.
Director-General of Customs.
Director of the Mint.
French Labour Department.
Ministry of Agriculture.
„ Finance.
„ The Interior.
„ Justice.
„ Public Works.
„ „ Instruction.
Paris Statistical Bureau.
Economiste Français, The Editor.
Journal des Economistes, The Editor.
Monde Economique, The Editor.
Polybiblion, Revue Bibliographique Universelle, The Editor.
Réforme Sociale, The Editor.
Rentier, Le, The Editor.
Revue d'Economie Politique, The Editor.
Revue Géographique Internationale, The Editor.
Revue de Statistique, The Publisher.
Statistical Society of Paris.

During the Year 1901-02—*Contd.*

(a) **Foreign Countries**—*Contd.*

Germany—
Imperial Health Bureau.
„ Insurance Bureau.
„ Judicial Bureau.
„ Statistical Bureau.
German Consul-General, London.
Prussian Royal Statistical Bureau.
Saxony Royal Statistical Bureau.
Berlin Statistical Bureau.
Frankfort Chamber of Commerce.
Frankfort Statistical Bureau.
Hamburg Statistical Bureau.
Hanover Statistical Bureau.
Allgemeines Statistisches Archiv, The Editor.
Archiv für Soziale Gesetzgebung, &c., The Editor.
Jahrbuch für Gesetzgebung, &c., The Editor.
Jahrbücher für Nationalökonomie und Statistik, The Editor.
Zeitschrift für die gesamte Staatswissenschaft, The Editor.
Zeitschrift für Socialwissenschaft, The Editor.
Geographical and Statistical Society of Frankfort.

Greece. Statistical Bureau.

Italy—
Director-General of Statistics.
„ Agriculture.
„ Customs.
Ministry of Finance.
Economista, The Editor.
Giornale degli Economisti, The Editor.
Rivista Italiana di Sociologia, The Editor.

Japan—
Consul-General, London.
Bureau of General Statistics.

Mexico—
Director of the Mint.
Statistical Bureau.

Netherlands—
Central Statistical Bureau.
„ Commission.
Department of the Interior.
„ Finance.
„ Waterstaat, &c.
Director-General of Customs.

Norway—
Central Statistical Bureau.
Christiania Health Department.
„ Municipal Statistical Bureau.

Paraguay. Central Commercial Bureau.

Portugal. General Statistical Bureau.

Roumania—
Statistical Bureau.
Bucharest Statistical Bureau.

Russia—
Central Statistical Committee.
Controller of the Empire.
Customs Statistical Bureau.
Department of Agriculture.
Department of Trade and Manufactures.
Ministry of Finance.
Russian Journal of Financial Statistics, The Editor.
Finland Statistical Bureau.
„ Geographical Society.

Salvador. The Statistical Bureau.

Servia. Statistical Bureau.

During the Year 1901-02—*Contd.*

(a) **Foreign Countries**—*Contd.*

Spain—
Director-General of Customs.
Geographical and Statistical Institute.
Statistical Bureau of Madrid.
Geographical Soc. of Madrid.

Sweden—
Central Statistical Bureau.
Stockholm Health Department.
Royal University of Upsala.

Switzerland—
Federal Assurance Bureau.
„ Statistical Bureau.
„ Department of Customs.
„ „ of Finance.
Statistical Society.
Swiss Union of Commerce and Industry.
Geneva Public Library.

United States—
Bureau of Education.
„ Foreign Commerce.
Census Office.
Commissioner of Labor.
Comptroller of the Currency.
Department of Agriculture.
Director of Geological Survey.
Industrial Commission.
Interstate Commerce Commission.
Naval Observatory.
War Department.
Secretary of the Treasury.
„ Interior.
Statistical Bureau, Treasury.
Surgeon-General, U. States Army.
California. Bureau of Labor Statistics.
Connecticut—
State Board of Health.
Bureau of Labor Statistics.
Illinois. Bureau of Labor Statistics.

United States—Contd.
Indiana. Bureau of Labor Statistics.

Iowa. Bureau of Labor Statistics.

Kansas. Bureau of Labor Statistics.

Maine. Bureau of Labor and Industrial Statistics.

Maryland. Bureau of Industrial Statistics.

Massachusetts—
Board of Arbitration.
„ Health, Lunacy, &c.
Bureau of Labor Statistics.
Metropolitan Water Board.

Michigan—
Bureau of Labor and Industrial Statistics.
Division of Vital Statistics.

Minnesota—
Bureau of Labor Statistics.
State Board of Charity.

Missouri. Bureau of Labor Statistics.

Nebraska. Bureau of Labor and Industrial Statistics.

New Hampshire. Bureau of Labor Statistics.

New Jersey. Bureau of Labor Statistics.

New York Public Library.
„ Bureau of Labor Statistics.
„ Insurance Department.
„ State University.

North Carolina. Bureau of Labor Statistics.

Ohio. Bureau of Labor Statistics.

Pennsylvania. Bureau of Industrial Statistics.

During the Year 1901-02—*Contd.*

(a) **Foreign Countries**—*Contd.*

United States—Contd.
- *Wisconsin.* University of.
  - Bureau of Labor Statistics.
  - State Board of Health.
- Boston Department of Municipal Statistics.
- Boston Public Library.
- Bankers' Magazine, The Editor.
- Bradstreet's Journal, The Editor.
- Commercial and Financial Chronicle, The Editor.
- Engineering and Mining Journal, The Editor.
- Journal of Political Economy, The Editor.
- Mineral Industry, The Publisher.
- Political Science Quarterly, Columbia University, The Editor.
- Quarterly Journal of Economics, The Editor.
- Yale Review, The Editor.
- Academy of Arts and Sciences.

United States—Contd.
- Academy of Political and Social Science.
- Actuarial Society of America.
- Economic Association, Baltimore.
- Geographical Society, New York.
- Philadelphia Commercial Museum.
- Philosophical Society, Philadelphia.
- Statistical Association, Boston.
- Columbia University, New York.
- John Crerar Library.
- Johns Hopkins University.
- Smithsonian Institution.
- Yale University.

Uruguay—
- Statistical Bureau.
- Director of Civil Registration.
- Montevideo Statistical Bureau.

(b) **India, and Colonial Possessions.**

India, British—
- Census Commissioner.
- Director-General of Statistics.
- Finance and Commerce Depart.
- Revenue and Agricultural Department.
- Lieutenant-Governor of Bengal.
- Bengal, The Collector of Customs.
- East India Railway.
- Indian Engineering, The Editor.
- „ National Congress.
- Asiatic Society of Bengal.
- Bombay Branch of the Royal Asiatic Society.

Canada—
- The High Commissioner.
- Census Commissioner.
- Department of Agriculture.

Canada—Contd.
- Deputy Minister of Finance.
- *British Columbia.* Department of Mines.
- *Ontario* Bureau of Industries.
  - „ Department of Agriculture.
- *Manitoba.* Department of Agriculture.
  - „ The King's Printer.
- Insurance and Finance Chronicle, The Editor.
- Royal Society of Canada.

Cape of Good Hope—
- Agent-General for the Cape.
- Colonial Secretary.
- Registrar-General.

During the Year 1901-02—*Contd.*

(b) **India, and Colonial Possessions**—*contd.*

Ceylon—
- Lieut.-Governor and Colonial Secretary.
- Superintendent of Census.
- General Manager of Government Railways.

Grenada. The Colonial Secretary.

Jamaica. Registrar-General.

Mauritius. The Colonial Secretary.

New South Wales—
- Agent-General, London.
- Government Statist, Sydney.
- Registrar-General.
- Railway Commissioners, Sydney.

New Zealand—
- Agent-General for New Zealand.
- Registrar-General.
- Registrar of Friendly Societies.
- Insurance Department.
- Labour Department.
- New Zealand Institute.
- Trade Review, The Editor.
- Wellington Harbour Board.

Queensland—
- Agent-General, London.
- Registrar-General.

Rhodesia. British South Africa Company.

South Australia—
- Agent-General for S. Australia.
- The Chief Secretary.
- The Registrar-General.
- Government Statist.
- Public Actuary.
- Public Library.

Straits Settlements. The Government Secretary, Perak.

Tasmania—
- Government Railways Department.
- Government Statistician, Hobart
- Royal Society of Tasmania.

Victoria—
- Agent-General for Victoria.
- Rt. Hon. the Premier of Victoria.
- Government Statist.
- Acting Registrar for Friendly Societies.
- Royal Society of Victoria.
- Public Library, &c., Melbourne

Western Australia—
- Agent-General for W. Australia.
- The Government Actuary.
- Acting Collector of Customs.
- Registrar-General.
- Department of Mines.
- Superintendent of Census.

(c) **United Kingdom and its several Divisions.**

United Kingdom—
- Admiralty Medical Department.
- Board of Agriculture.
- Army Medical Department.
- Board of Trade.
- British Museum.
- Colonies, Secretary of State for.
- Companies in Liquidation, Inspector-General of.

United Kingdom—Contd.
- Customs, Commissioners of.
- Friendly Societies, Registrar of.
- Home Office.
- India Office.
- Inland Revenue, The Commissioners.
- Inspector-General in Bankruptcy.
- Labour Department.

During the Year 1901-02—*Contd.*

(c) **United Kingdom and its several Divisions**—*Contd.*

United Kingdom—Contd.

Local Government Board.
Navy Medical Department.
Royal Mint.
War Office, Intelligence Department.
Woods, Forests, &c., H.M. Commissioners.

England—

Registrar-General of England.
London, Corporation of.
„ County Council.
„ School Board.
„ University.
Metropolitan Asylums Board.
„ Commissioner of Police.
Battersea, The Borough Council.
Wandsworth, The Borough Council.
Birmingham City Treasurer.
Bradford City Accountant.
Leicester Borough Accountant.
Liverpool Free Public Library.
Manchester Free Public Library.
Mansion House Council on Dwellings of the Poor.
Mersey Conservancy.

England—Contd.

Paddington Medical Officer of Health.
Poplar Medical Officer of Health.
West Hartlepool, The Borough Accouhtant.
The Medical Officer of Health of the Local Government Board and of the following towns: Birkenhead, Birmingham, Bolton, Bradford, Brighton, Bristol, Cardiff, Derby, Halifax, Huddersfield, Hull, Leeds, Leicester, Liverpool, Manchester, Newcastle-on-Tyne, Norwich, Nottingham, Preston, Salford, Stafford, Sunderland, West Hartlepool, Wigan, Wolverhampton.

Ireland—

Department of Agriculture.
Registrar-General of Ireland.

Scotland—

Education Department.
Registrar-General of Scotland
Edinburgh City Chamberlain
Aberdeen Medical Officer.
Glasgow Medical Officer

(d) **Authors, &c.**

Allan, Dr. F. J., London.
Allen, H. B., Hobart.
Angier, T. V. S., London.
Aschehong, T. H., Christiania.
Atkinson, Edward, U.S.A.
Avebury, Rt. Hon. Lord, London.
Back, Frederick, Tasmania
Bartrum, Rev. E., London.
Belago, His Excellency D., St. Petersburg.
Bertillon, Dr. J., Paris.
Bertolini, A., Italy.
Billings, Dr. J. S., Washington.
Blenck, Herr E., Berlin.
Böckh, Dr. R., Berlin.
Bodio, Professor Luigi, Rome.
Bourinot, Sir J. G., K.C.M.G., LL.D.
Bourne, Arthur, New York.
Boutcher, Mortimore, & Co., London.
Brabrook, E. W., London.
Brassey, Rt. Hon. Lord, London.
Broomhall, G. J. S., Liverpool.
Brough, Bennett H., London.
Cauderlier, G., Brussels.

During the Year 1901-02—*Contd.*

(d) **Authors, &c.**—*Contd.*

Chance, Sir W., Bart., London.
Coghlan, T. A., Sydney.
Collet, Miss C. E., London.
Conrad, Dr. J., Jena.
Cooper, Joseph, Farnworth.
Cossa, Luigi, Italy.
Cox, Harold, London.
Courtney, J. M., Canada.
Craigie, Major P. G., London.
Craik, Sir Henry, London.
Crossfield, C. J., Liverpool.
Dalla Volta, Riccardo, Florence
Deane, Albert B., London.
Dick, G. H., Glasgow.
Digby, William, London.
Doyle, Patrick, Calcutta.
Dudfield, Reginald, London.
Dun, R. G. & Co., New York.
Eaton & Sons, H. W., London.
Eberstadt, Rudolph, Leipzig.
Edgeworth, F. Y., Oxford.
Edwardes, Edward J., London.
Einaudi, Luigi, Turin.
Ellison & Co., Liverpool.
Engel, Dr., Cairo.
Fanno, Marco, Treviso.
Fay, Frederick H., Boston.
Ferraris, Carlo F., Rome.
Figgis, S. & Co., London.
Fischer, Herr Gustav, Jena
Fleming, Owen, London.
Fontan e Illas, C. G., Uruguay.
Ford, Worthington C., U.S.A.
Fornasari di Verce, Dr. E., Italy.
Forster, John W., Nottingham.
Foville, A. de, Paris.
Frederiksen, N. C., London.
Garcke, Emile, London.
Giglioli, Italo, Sardinia.
Ginsburg, Dr. B. W., London.
Giretti, Edoardo, Turin.
Gooch, Thomas & Sons, London.
Gouge, Herbert D., Adelaide.
Gow, Wilson, & Stanton, London.
Guillaume, Dr. Louis, Bern.
Guillaumin et Cie., Paris.
Guyot, M. Yves, Paris.
Haggard, F. T., Tunbridge Wells.
Hall, Thomas, New South Wales.
Hamilton, J. J., London.
Hart, Sir R., Bart., G.C.M.G., Peking.
Hayward, T. E., Haydock.
Hector, Sir James, New Zealand.
Helmuth Schwartze & Co., London.
Hoar, Hon. George F., U.S.A.
Hoffman, F. L., New York.
Hollerith, H., Washington.
Humphreys, N. A., London.
Hyde, John, U.S.A.
Inama-Sternegg, Dr. K. T., Vienna.
Irvine, S. W. D'Arcy, Sydney.
Jaffé, Edgar, Heidelberg.
Jagger, J. W., Cape Town.
Johannis, Arturo J. de, Florence.
Johnson, Geo., Ottawa.
Johnston, R. M., Hobart.
Juraschek, Dr. F. v., Vienna.
Kelly, Dr. Charles, Worthing.
Keltie, J. Scott, London.
Kemper, Dr. G. de Bosch.
Kiær, M. A. N., Christiana.
King, A. W. W., London.
King, P. S. & Sons, Westminster.
Körösi, Joseph, Budapest.
Latzina, Dr. F., Buenos Ayres.
Layton, C. & E., London.
Leroy-Beaulieu, Paul, Paris.
Levasseur, E., Paris.
Linroth, Dr. K., Stockholm.
Longmans & Co., London.
Love, James, United States.
Macdonald, Arthur, United States.
Maclean and Henderson, Stirling.
Macmillan & Co., London.
Manchez, Georges, Paris.
Markham, M. C., Washington.

During the Year 1901-02—*Contd.*

(d) **Authors**, &c.—*Contd.*

Martineau, George, London.
Mather and Crowther, London.
Mathieson & Sons, F. C., London.
Mayr, Dr. G. von, Strassburg.
Meikle, James, Edinburgh.
Methuen & Co., London.
Mitchell & Co., London.
Molesworth, Sir Guilford, London.
Molinari, M. G., Paris.
Money, Alonzo, C.B., Cairo.
Morgan, Percy C., London.
Moss & Co., R. J., Egypt.
Muirhead, Claud, Edinburgh.
Murray, J., London.
Neumann, J. O., London.
Newcomb, H. T., Washington.
Newsholme, Dr. A., Brighton.
Neymarck, A., Paris.
Nicholson, J. Shield, Edinburgh.
O'Conor, J. E., C.I.E., India.
Page & Gwyther, London.
Paish, George, London.
Palgrave, R. H. Inglis, Yarmouth.
Palmer, Sir E. M., K.C.M.G., Cairo.
Paulin, David, Edinburgh.
Petersen, Aleksis, Copenhagen.
Pierson, Israel C., New York.
Pierson, N. G., Netherlands.
Pittar, T. J., London.
Pixley & Abell, London.
Plaza, V. de la, London.
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Women's Industrial Council.

(f) **Periodicals, &c. (British).** *The Editors of—*

Accountant, The, London.
Agricultural Economist, London.
Appointments Gazette, Cambridge.
Athenæum, The, London.
Australian Trading World, The.
Bankers' Magazine, The, London.
British Refrigeration.
Broomhall's Weekly Corn Trade News, Liverpool.
Browne's Export List, Newcastle-on-Tyne.
Citizen, The, London.
Colliery Guardian, The, London.
Commercial World, The, London.

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Joint Stock Companies Journal.
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15th April. †	Factory Legislation considered with Reference to the Wages, etc., of the Operatives protected thereby. By G. H. Wood.
27th May. †	The Sugar Question. By Yves Guyot.
17th June †	To be announced.

THE HOUR OF MEETING IS USUALLY 5 P.M.

The Meetings marked thus † will be held at the Society's Rooms, and the usual refreshments will be served prior to the Meeting, from 4.30 p.m.

Particulars of the Papers to be read and of the time and place of Meeting will always be found in an advertisement on that page of the "Times" which faces the leading articles, on the Saturday preceding the holding of the Meeting. The advertisement also appears in other London Daily Papers at the same time, and to these announcements the attention of Fellows is particularly directed.

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T. Graham Balfour, M.D., F.R.S.	1888–90
Frederic J. Mouat, M.D., LL.D., F.R.C.S.	1890–92
Charles Booth, D.Sc., F.R.S.	1892–94
The Rt. Hon. the Lord Farrer	1894–96
John Biddulph Martin, M.A., F.Z.S.	1896–97
Sir Alfred Edmund Bateman, K.C.M.G..................	1897
The Rt. Hon. Leonard H. Courtney, M.A., M.P.........	1897–99
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ROYAL STATISTICAL SOCIETY,

No. 9, Adelphi Terrace, Strand, W.C., London.

NOTICES TO FELLOWS.

March, 1902.

The Council desire to call the attention of the Fellows to the fact that notwithstanding the change in the name of the Society by the addition of the word "Royal," they are still, in using letters after their names, signifying the membership of the Society, only entitled, under Rule 6, to use the letters F.S.S.

Annual Subscriptions are due in advance, on the 1st of January in each year. A Form for authorising a Banker or Agent to pay the Subscription Annually, will be forwarded on application to the Secretary. When convenient, this mode of payment is recommended. Drafts should be made payable to the order of "The Royal Statistical Society," and crossed "*Drummond and Co.*"

To be included in the Ballot at any particular Ordinary Meeting, the Nomination Papers of Candidates for Fellowship must be lodged at the Office of the Society at least six days before the date of such Meeting.

Fellows who may desire to receive Special and Separate Notices of each Paper to be read before the Society at the Ordinary Meetings, should indicate their wishes to the Secretary.

The Ordinary Meetings of the Society are held at 5 p.m., in most cases at **The Society's Rooms**, 9, Adelphi Terrace, W.C.

Particulars of the Papers to be read, and of the time and place of Meeting, will always be found in an advertisement on that page of the "Times" which faces the leading articles, on the Saturday preceding the holding of the Meeting. The advertisement also appears in other London Daily Papers at the same time, and to these announcements the attention of Fellows is particularly directed.

The *Journal* is issued on the last day of the months of March, June, September, and December in each year. Copies are delivered *carriage free* to all Fellows of the Society. Arrangements have been made for their delivery to those Fellows resident in London and the suburbs by Messrs. Carter Paterson & Co., and to most provincial Fellows by that firm's agents. In the case of a few Fellows resident in the United Kingdom, delivery is made by Parcel Post, whilst all copies for Colonial and Foreign Fellows are sent by mail. British Fellows who do not get their *Journals* within the first fourteen days of the months of April, July, October, and January respectively, are earnestly requested to communicate with the Society without delay, as the carriers cannot be expected to investigate complaints or be responsible for loss unless prompt notice be given.

Fellows are entitled to a copy of the Catalogue of the Library and of the Index to the Catalogue. They may be had on personal application at the office, or will be forwarded upon the payment of carriage (9*d*. per parcel post). Fellows residing abroad or in the colonies are requested to send the necessary amount to cover postage, according to postal circumstances. (Weight, 3 lb. 14 oz. and 2 lb. 10 oz. respectively.)

The Library and the Reading Room are open daily for the use of Fellows from 10 a.m. to 5 p.m., excepting on Saturdays, when they are closed at 2 p.m.

Fellows changing their Addresses are requested to notify the same to the Secretary, so that delay or error in forwarding communications, or the *Journal*, may be avoided.

By Order of the Executive Committee.

Royal Statistical Society.

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THE SECRETARY,
ROYAL STATISTICAL SOCIETY,
9, Adelphi Terrace, Strand,
London, W.C.

Rule IV.—*Every Candidate for admission as a Fellow of the Society shall be proposed by two or more Fellows, who shall certify from their personal knowledge of him or of his works that he is a fit person to be admitted a Fellow of the Society. Every such Certificate, having been read and approved of at a Meeting of the Council, shall be suspended in the Office of the Society until the following Ordinary Meeting, at which the Vote shall be taken.*

READ *and* APPROVED *at a* MEETING *of the* COUNCIL *this* *day of* 190 .

Chairman.

Suspended the day of 190 . *Secretary.*	Elected the day of 190 . *Secretary.*

31.3.1902

ROYAL STATISTICAL SOCIETY.

List of the Society's Medallists,

With the Date of the Awards.

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Has been awarded in Gold *to*—

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1894. Sir Robert Giffen.
1900. Mr. J. A. Baines.

In Silver *to*—

1893. Sir John Glover.
1894. Mr. A. Sauerbeck.
1895. Mr. A. L. Bowley.
1897. Mr. Frederic J. Atkinson.
1899. Mr. Charles S. Loch.
1900. Mr. R. F. Crawford.
1901. Mr. T. A. Welton.

THE HOWARD MEDAL.

1875. Mr. Edward Smith.
1876. Dr. J. C. Steele.
1878. Dr. John Martin *and* Captain H. Hildyard (*extra prize*).
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1880. Mr. H. P. Potter.
1881. Dr. F. Pollard.
1882. Mr. D. Manson Fraser.
1883. Dr. R. D. R. Sweeting.
1884. Dr. Clement Dukes.
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ROYAL STATISTICAL SOCIETY.

LIST OF THE SOCIETY'S PUBLICATIONS.

Note.—Sets—or Copies of any number—of the *Journal*, or of the other Publications of the Society (if not out of print), can be obtained at the Offices of the Royal Statistical Society, 9, Adelphi Terrace, Strand, W.C., or through any bookseller.

	Price.
Journal (published quarterly)— Vols. 1—64. 8vo. 1838-1901	5*s.* each part*
General Analytical Index to Vols. 1—50 of the Journal (1838-87). In 4 parts. 8vo.—	
(i) For the First Fifteen Volumes (1838-52)	7*s.* 6*d.*
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Subject-Index to the Journal, Vols. 28—57, 1865-94	1*s.* 6*d.*
First Report of a Committee on Beneficent Institutions. I. The Medical Charities of the Metropolis. 68 pp. 8vo. 1857	2*s.* 6*d.*
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Index to the Catalogue of 1884— i + 372 pp. Cloth, super royal 8vo. 1886	10*s.*
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By different resolutions of the Council, the prices charged to Fellows are as follows:—(a.) back numbers of the *Journal* of the Society, three-fifths of the publishing price; (b.) each part of the General Index to the *Journal*, 2*s.* 6*d.*; (c.) the Jubilee Volume, 5*s.*; (d.) the Subject-Index, 1*s.*

Note.—One or two numbers of the *Journal* and Part ii of the Index are now out of print.

* Before 1870 the price varied.

NOTICE.

The Council of the Royal Statistical Society wish it to be understood that the Society is not responsible for the statements or opinions expressed in the Papers read before the Society or inserted in its *Journal*.